AMERICAN Railroad Journal

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Steam Navigation, Commerce and Finance, Tramways, New Inventions, Machinery, Mining.

WHOLE No. 2,449.] NEW YORK, APRIL, 1883. [VOLUME LVII.—No. 1.

ORGANIZATION.

AT a meeting of the directors of the Pittsburgh and Grafton Railroad Company, held at Wheeling, W. Va., on the 13th inst., the following officers were elected: James H. Hopkins, of Pittsburgh, president; Henry M. Mathews, of Greenbrier, vice-president; Joseph S. Miller, treasurer; Randolph Stalnaker, secretary, and Jno. W. Mason, of Grafton, attorney. The intention is to construct a standard-gauge steel railroad from Pittsburgh to Grafton. It is expected to consolidate with the Grafton and Greenbrier Railroad, thus giving an air-line road from Pittsburgh to intersect the Chesapeake and Ohio at or near White Sulphur Springs.

AT a meeting of the stockholders of the New Orleans, Baton Rouge and Meridian Railroad Company, held at Vicksburg, Miss., on the 9th inst., the following directors were elected: R. T. Wilson, John H. Ingraham, John A. Grant, J. M. Edwards, R. H. Elliott, C. E. Armstrong, W. S. Matthews. The following officers were elected by the directors: R. T. Wilson, president; J. M. Edwards, vice-president, general manager and treasurer; John A. Grant, chief engineer; C. E. Armstrong, secretary and assistant treasurer.

AT the annual meeting of the stockholders of the New York Central and Hudson River Railroad Company, held in Albany, N. Y., on the 18th inst., William H. Vanderbilt, Cornelius Vanderbilt, William K. Vanderbilt, Frederick W. Vanderbilt, Augustus Schell, Samuel F. Barger, Chauncey M. Depew, James H. Rutter, J. Pierpont Morgan, Cyrus W. Field, of New York; Chester W. Chapin, of Springfield, Mass.; John Allen, Jr., of Buffalo; James M. Marvin, of Saratoga Springs, were elected directors for the ensuing year.

AT the monthly meeting of the New England General Passenger and Ticket Agents, held in Boston on the 18th inst., the following officers were elected: J. F. Liscomb, of the Portland Steam Packet Company, president; Walter Pearce, of the Connecticut Western Railroad, vice-president; C. A. Waite, of the Worcester and Nashua Railroad, secretary. The principal business transacted was the arranging of excursion rates between Boston and New York the coming summer.

THE directors of the Panama Railroad Company, elected on the 9th inst., are: J. G. McCullough, R. W. Thompson, Jesse Seligman, E. P. Fabbri, J. W. Ellis, Theo. J. De Sabla, D. O. Mills, Charles G. Francklyn, Joseph Ogden, Wm. B. Dinsmore, Thomas Maddock, Geo. Gare and E. F. Winslow. The officers are: J. G. McCullough, president; R. W. Thompson, vice-president; E. Z. Penfield, secretary and treasurer.

THE officers and directors of the Railroad Safety Lock and Signal Company, elected on the 11th inst., are: J. H. Michener, president; Samuel M. Plush, M. D., vice-president; E. F. McKean, secretary; George B. Dresher, treasurer. J. H. Michener, S. M. Plush, M. D., W. M. Huey, W. C. Shaffer and George B. Dresher, directors. W. C. Shaffer, general manager.

THE directors of the Pensacola and Atlantic Railroad Company, elected at Pensacola, Florida, on the 11th inst., are: M. H. Smith, John E. Green, W. F. McCormick, G. A. Stanley and W. D. Chipley. M. H. Smith, of Louisville, Ky., was chosen president, W. D. Chipley, vice-president and general superintendent, and C. Quarrier, secretary and treasurer.

AT the annual meeting of the stockholders of the Long Island Railroad Company, held on the 10th inst., the following directors were elected for the ensuing year: Austin Corbin, J. Rogers Maxwell, Henry Graves, James G. K. Duer, Edward Tuck, J. P. Townsend, A. Sully, Demas Barnes, F. B. Wallace, F. W. Peck, Henry W. Maxwell and Daniel C. Corbin.

THE following gentlemen have been elected directors of the Long Island City and Flushing Railroad Co.: Austin Corbin, J. Rogers Maxwell, Henry Graves, Henry W. Maxwell, Alfred Sully, Edward E. Sprague, Frederick W. Dunton, Charles Knoblauch, Gilman S. Moulton, William G. Wheeler, Carl Victor, Thomas F. Ward, E. B. Hinsdale.

INCORPORATION.

THE North Carolina, Cleveland and Chattanooga Railroad Company has been incorporated in Tennessee to build a road from a point in Polk county, on the North Carolina line, between the nearest point to the Hiawassee River and the Georgia line, connecting with the Western North Carolina Railroad, or its extension, passing then through Polk and Bradley counties, through Cleveland, Tenn., crossing the East Tennessee, Virginia and Georgia Railroad, thence through James and Hamilton counties to Chattanooga, crossing the Cincinnati Southern at or near Boyce station.

THE Allegheny and Western Railroad Company was chartered at Harrisburg, Penn., on the 14th inst. The line begins at a point on the West Penn and Shenango Railroad, about six miles north of Butler, and runs to East Brady, in Clarion County; length, twenty miles. The capital stock is $500,000. President, B. K. Jamison, Philadelphia. Directors, J. Henry Kershaw, Philadelphia; William Waugh, J. T. Blair, Greenville; A. H. Steele, Titusville; Arnold G. Plummer and W. R. Meredith, Philadelphia.

A CHARTER was granted at Harrisburg, Penn., on the 17th inst. to the Pittsburgh, Allegheny and Chicago Railroad Company. The road is to run from Pittsburgh to the boundary line of Ohio through the counties of Allegheny and Beaver, a distance of

forty miles. The capital will be $200,000, and the headquarters of the company will be in Pittsburgh.

THE Sinnemahoning and Sheffield Railroad Company has been chartered at Harrisburg, Penn., with a capital stock of $390,000; it is to be sixty-five miles long, and will run from between the counties of Cameron and Elk, at Bennett's Branch of Sinnemahoning Creek, to Sheffield in Warren county.

THE Lake Superior, Willmar and Dakota Railway Company has been incorporated with a capital of $1,250,000. The road is to run from some point on the Northern Pacific near St. Cloud, through Willmar and Granite Falls to the west line of Minnesota, with a branch into Lac-qu-Parle county.

THE Paramore Railroad Company have secured a charter for a line between Clarendon, on the White River, to Hot Springs, Ark., by way of Little Rock.

CONSTRUCTION.

THE Sioux City and Pacific Railroad has recently been opened for business to Valentine, Neb., four miles west of Fort Niobrara, thirty miles south of Rosebud Agency, 119 miles east of Pine Ridge Agency, and 186 east of Rapid City, in the Black Hills. The Elkhorn Valley Line, starting from Missouri Valley, where it intersects the Chicago and Northwestern Railway, runs westward, crossing the Missouri River at Blair, intersects the Union Pacific Railroad at Fremont, cutting off thirty-three miles between Chicago and Fremont; thence up the Elkhorn Valley to its source, and thence across 100 miles of free Government land, open to homesteading and pre-empting.

THE contract for the construction of a railroad from Carlisle, Penn., to Gettysburg has been awarded to Keller & Bush, of Lancaster. The new road is to be known as the Harrisburg and Gettysburg Railroad, running from Gettysburg to Hunter's Run, where it will make connection with the South Mountain Railroad, and run to the South Mountain Junction, where it will again connect with the Cumberland Valley Railroad, and run through to Harrisburg. The contract calls for the completion of the road by the 1st of September. The Carlisle Manufacturing Company has been awarded the contract for building eight construction cars for the new road.

THE directors of the Southern Maryland Railroad have concluded a contract with Charles H. Middleton, of Philadelphia, for completing and equipping the road to Point Lookout, on the Potomac, and Drum bay, on the Chesapeake. The main line of the road runs from the District of Columbia through Prince George's, Charles and St. Mary's counties to Point Lookout. From Mechanicsville, in St. Mary's county, a branch road will be built to Drum Bay, giving a terminus at deep water on the Chesapeake. The road is to be completed to the latter point within one year and to Point Lookout within two years.

THE contracts for the construction of the Philadelphia, Germantown and Chestnut Hill Railroad have been let. The seven miles have been divided into nine sections, in order that the work may be completed as soon as possible. The work has been awarded as follows: First and second sections to Smith & McGraw; third and fourth sections to McLaughlin & Riley; fifth section to Condon Brothers; sixth section to E. D. Smith; seventh section to E. J. Gaynor, and eighth and ninth sections to Costigan & Thayer.

THE Eastern Ohio Railroad, which has been for a number of years in operation from Cumberland, Ohio, eastward eight miles to Point Pleasant, on the Cleveland and Marietta Railroad, has recently been purchased by the Cincinnati, Wheeling and New York Railroad Company. The new company has extended the road from Point Pleasant east to Senecaville, five miles, making it thirteen miles long.

THE Asheville and Spartanburg Railroad Company propose to commence at once the construction and equipment of the unfinished portion of their road between Henderson and Asheville, N. C., a mortgage for $500,000 having been executed for that purpose. The work will be completed in two months. This, it is said, is the "missing link" between the South Atlantic coast and the Northwest.

GROUND was broken on the 16th inst. at Mount Blanchard, Hancock county, Ohio, for a section of eleven miles of the Cleveland, Delphos and St. Louis narrow-gauge Railroad, which will complete the line to Cary, in Wyandot county, joining the Indiana, Bloomington and Western, and Columbus, Hocking Valley and Toledo railroads.

A NARROW-GAUGE Railroad has recently been completed by the Rogers Lumber Company from Seney, Ga., on the East Tennessee, Virginia and Georgia road, thirteen miles south of Rome, south by west to Deaton, on the East and West road. It is nine miles long, and was built chiefly for carrying lumber, but passenger trains are also run on a regular schedule.

PROPOSALS for the grading and masonry of the extension of the Bangor and Piscataquis Railroad from Blanchard to Moosehead Lake, 14 miles, will be received up to May 10th, 12 o'clock, M., at the office of said Company in Bangor, Me., where the profiles, plans and specifications of the required work may be examined. Moses Giddings is president of the company.

SURVEYS have been made for a branch of the New York and New England Railroad about five miles long from the Providence Division, near Baltic, Conn., southeast to the Norwich and Worcester Division at Taftville. It will accommodate several large mills and will shorten considerably the distance between Hartford and Norwich.

A SURVEY of the route of the Warrior Coal Fields Railroad will soon be commenced. The road is to run from Meridian, Miss., to Gainesville, Ala., and thence to Decatur, a total length of 200 miles. The road will traverse the greatest width of the Warrior coal fields, which are from 5,000 to 6,000 square miles in extent.

THE last spike was driven on the 11th inst. at the Tennessee and Kentucky State line connecting the Knoxville branch of the Louisville and Nashville Railroad with the East Tennessee, Virginia and Georgia Railroad. This makes a direct line from Knoxville to Louisville, 260 miles.

THE building of the branch railroad from the New York, New Haven and Hartford depot in New Haven to Savin Rock will probably be completed by the last of August. The estimated cost of the road, which will be nearly three miles in length, is $50,000.

THE Cincinnati and Eastern Railroad has been completed and opened to Evans, Ohio, three miles beyond the late terminus at Mineral Springs, and eighty miles from Cincinnati. Track-laying is in progress between Evans and Galena.

WORK will be resumed this month on the extension of the Northeastern, of Georgia, Railroad from Tallulah Falls, Ga., to Rabun Gap, and about the same time work will be begun on the section of the road in North Carolina.

THE Woodland *Democrat* says it is now almost an assured fact that the Central Pacific Railroad Company will build a road from Vacaville through Berryessa Valley into Lake county. Lakeport, the county seat, is to be the terminus.

TRACK on the Wisconsin, Iowa and Nebraska has been laid to a point six miles northeast of Gladbrook and twenty-eight miles beyond Marshalltown, and grading is done to Waterloo, about thirty miles beyond Gladbrook.

THE New Iberia (La.) *Sugar Bowl* says that as soon as the road from New Iberia to the salt mines is completed, work will commence on a line connecting New Iberia with Abbeville, a distance of twenty miles.

THE managers of the Des Moines, Osceola and Southern Rail-

way have decided to put under contract sixty miles of road from the present terminal point, to be built at once. This will carry the road into Missouri.

THE contract for the building of the Chicago, Springfield and St. Louis Railway between Springfield and St. Louis has been let, and a large force is now at work between Litchfield and St. Louis.

THE contractors for the grading of the Ontario and Quebec Railway in the vicinity of Toronto have been instructed to prepare at once for track-laying between Carleton Junction and that city.

GROUND was broken on the 18th inst. at Gettysburg, Penn., for the Gettysburg and Harrisburg Railroad, "amid the firing of cannon, ringing of church bells and cheers of the people."

THE grading on the St. Johns and Lake Eustis Railroad will be completed to Tavares, Florida, by the 1st of May.

THE Southern Pacific Railroad Company is now putting down fifty car loads of steel rails on the Santa Ana branch.

THE Toledo and Indianapolis Railroad was opened for regular trains between Toledo and Findlay on the 14th inst.

WORK is progressing rapidly on the New Orleans and Mississippi Valley Railroad road-bed below Baton Rouge.

WORK on the Gatineau Valley (Canada) Railway will commence the first week in May.

Phosphor-Bronze.

PHOSPHOR-BRONZE, a substance manufactured by the Phosphor-Bronze Smelting Co., No. 512 Arch street, Philadelphia, Penn., is being extensively used in locomotives, passenger and freight cars, marine and stationary engines, rolling-mills and miscellaneous machinery in the form of Phosphor-Bronze S" bearing metal. It is applied to bearings, slide valves, cross-head gibs, piston rings, bushings, steam connections, etc., with a large and extending recognition of its extraordinary value in these applications. It has been in use about ten years.

The manufacturers claim for it all qualities necessary for a good bearing metal, including greater durability than any other metal employed in this way, and less wear upon journals and axles. Friction and heating are reduced to a minimum, and if from over pressure or want of lubrication the bearing becomes hot, it will not cut the journal. The loss in re-melting the ingot is found to be slight—much less than with brass. As to the all-important consideration of cost, it has been found, on some of the leading railroads of the country, that its durability and excellent service in every way more than compensate for its slightly higher price than that of ordinary gun metal or composition.

Phosphor-Bronze S" bearing metal is furnished to consumers either in ingots or castings. Instructions for handling the alloy are given with the first order, and any competent founder can make good work.

We learn that Phosphor-Bronze has been found a trustworthy and superior substance in the form of telephone wire, resisting corrosion, having four times its weight per mile in tensile strength, being light and thus well adapted for long spans and small in size, and having a resistance, found by actual experiment made by WM. W. D. SARGENT, electrical engineer, only about one-half that of iron wire of equal weight.

We recommend railway men and others interested in using a cheap and trustworthy alloy for the purpose briefly indicated, to write the manufacturers for further information.

IT is proposed to lay a cable from Portugal to the Azores Islands, thence to the Bermuda Islands and thence to Havana; also a cable from Bermuda to New York and a cable connecting Havana with the Central AmericanTelegraph lines. By the new project the cost of messages from Spain to Havana will be reduced from $1.20 per word to 30 cents.

Commerce of New York.

THE foreign imports at New York in March were:—

	1881.	1882.	1883.
Ent. for cons.	$21,166,592	$24,877,792	$19,253,292
Do. for warehousing	8,449,640	8,552,410	10,946,440
Free goods	11,652,398	11,471,813	9,164,551
Specie and bullion	7,312,131	481,369	3,732,716
Total ent. at port	$48,580,761	$45,383,384	$43,096,999
Withdrawn from warehouse	7,813,347	7,085,090	9,188,662

The foreign imports at New York for three months from January 1, were:—

	1881.	1882.	1883.
Ent. for cons.	$54,341,210	$69,936,736	$58,454,834
Do. warehouse	20,579,920	22,352,069	28,104,818
Free goods	31,275,623	32,562,983	30,886,616
Sp. and bullion	12,626,630	1,081,415	4,846,899
Total en. at port	$118,823,383	$125,933,203	$122,293,167
Withdrawn from warehouse	22,205,211	22,336,742	.....

The foreign imports at New York for nine months ending March 31, were:—

	1881.	1882.	1883.
6 months ending January 1	$280,770,515	$252,275,460	$248,987,459
January	36,085,359	40,135,673	40,250,143
February	34,157,263	40,414,146	38,946,025
March	48,580,761	45,383,584	43,096,999
Total nine months	$399,593,898	$378,208,663	$371,280,626
Deduct specie	83,221,166	27,369,713	10,590,922
Total mdse	$316,372,732	$350,838,950	$360,689,704

The duties received at New York for the nine months ending with March were:—

	1880-'81.	1881-'82.	1882-'83.
In July	$13,360,394 37	$12,079,573 95	$13,730,752 87
In August	14,492,361 87	15,205,469 58	16,483,260 62
In September	12,856,636 10	14,104,647 51	14,690,362 74
In October	10,574,333 53	13,011,426 27	13,095,876 47
In November	9,079,082 36	9,711,039 46	9,938,679 7
In December	9,230.734 57	10,972,321 38	10,380,192 5
In January	10,572,559 15	13,387,515 96	12,574,837 84
In February	11,217,766 87	13,585,053 25	12,191,602 66
In March	13,122,964 03	13,999,138 76	12,438,301 64
Total 9 mos.	$104,506,832 85	$116,055,186 12	$115,523,867 11

The exports from New York to foreign ports in the month of March, were:—

	1881.	1882.	1883.
Dom. produce	$34,492,683	$24,689,145	$30,427,317
For. free goods	1,256,188	278,801	1,183,596
Do. dutiable	547,814	620,347	480,783
Specie and bullion	1,304,122	4,339,698	2,363,445
Total exports	$37,594,807	$29,928,591	$34,475,141
Do. exclusive of specie	36,290,685	25,588,893	32,091,696

The exports from New York to foreign ports, for three months from January 1, were:—

	1881.	1882.	1883.
Dom. produce	$90,083,991	$76,056,644	$85,508,189
For. free goods	3,240,988	1,506,432	2,528,672
Do. dutiable	1,366,928	1,609,608	1,374,154
Sp. and bullion	3,523,079	13,858,000	4,837,004
Total exports	$98,214,986	$93,030,684	$84,248,019
Do. exclusive of specie	$94,691,907	$79,172,684	$89,411,015

The exports (exclusive of specie) from New York to foreign ports for nine months ending with March 31, were:—

	1881.	1882.	1883.
Six months ending January 1	$220,839,350	$187,136,859	$188,770,362
January	30,264,919	27,848,734	28,890,949
February	28,136,303	25,735,057	28,428,370
March	36,290,685	25,588,893	32,091,696
Total produce	$315,531,257	$266,309,543	$278,181,377
Add specie	8,172,480	20,129,049	16,938,677
Total exports	$323,703,737	$286,438,592	$285,120,054

THE bill amending the Broadway Underground Railway Charter so as to allow a four-track road, Arcade system, has passed the New York Assembly.

THE steel blades of Damascus, the oldest city in the world, are widely celebrated. So are also the steel pens of the Esterbrook Steel Pen Company.

TRAINS on the Nantasket Beach Railroad commenced running on the 18th inst. The single fare on the road has been advanced to fifteen cents.

THE Railroad Commissioners do not recommend a reduction of fare on the elevated railroads.

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MR. JAMES J. WHITE, Ottawa, Canada, writer of "Our Canadian Letter," acts as agent for the AMERICAN RAILROAD JOURNAL in Canada. He is authorized to receive, in behalf of the company, subscriptions and advertisements for this journal: also news of the character which he can utilize in the preparation of his Letter, or send to us for use elsewhere within these columns. He respectfully invites information concerning Railroad matters generally, Mining, Banking, Finance and Manufactures.

☞ ALL correspondence, communications and contributions intended for publication should be addressed to the "Editor of the AMERICAN RAILROAD JOURNAL." Business letters, subscriptions, orders for copies and advertisements should be sent to the "PHENIX PUBLISHING CO. OF N. Y.

WE invite railroad officers to send us notice of elections, transfers, appointments, resignations, etc.; and all our readers would oblige us by furnishing us with any items of news which may come to their knowledge and are of a suitable nature for our columns. It is our intention to publish monthly full and accurate information regarding those enterprises and industries to which the AMERICAN RAILROAD JOURNAL is devoted, and to effect this end we solicit the co-operation of readers interested therein. We aim specially to record all new railway enterprises in the United States and Canada, and to note the progress of construction on all new roads and extensions; and we request those concerned in railway building to give us early information concerning the above, that our reports may be as complete as possible.

Correspondence and contributed articles are also requested for our special departments devoted to Finance, Commerce, Street Railways, and New Inventions. All communications should bear the name and address of the writer, not necessarily for publication, but to insure the editor's attention.

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THE present is the first number of the AMERICAN RAILROAD JOURNAL as a monthly magazine, and No. 1 of a new volume. Upon examination it will be found that it possesses features which, we believe, give it superiority above any past issue. Thirty-six pages—the minimum number, by the way—somewhat reduced in size from that of previous volumes, and looking handsomer on that account, because having wider margins; a new measure of columns, and two instead of three to each page; a new and fine quality of pleasantly tinted paper, and a wrapper which the most æsthetic people will regard with favor—these are among the new and improved characteristics of a veteran business journal, the future of which was never more hopeful than now. The changes indicated, especially that as to periods of issue, have been made after much careful consideration; and are adopted with the means and the spirit which will do more than maintain the excellent standing which the AMERICAN RAILROAD JOURNAL has enjoyed for more than fifty years.

A CONTEMPORARY, *The Railway Age*, Chicago, gives earnest support to the alleged intention of the promoters of the coming Railroad Exposition to devote its proceeds to the erection and endowment of a great hospital and home for railway employés. Its argument is best summarized in a sentence which we quote, with the expression of our hope that the humane feeling prompting the project and the admirable remarks of our fellow journal, will not be disappointed: "The great majority of railway men in the country are still unprovided for, and sudden accident or sickness and certain disablement from old age will leave many of them homeless."

MR. ALBERT MICHELSON, Chicago, Superintendent of the American Railway Construction Company, and patentee of the "Monarch" track-layer, writes us as follows:

"There being only two inventors of patent track-layers besides myself, but many dealers in the article, I ask you whether it should not be the duty of each of the claimants for patent track-layers to have their respective *unrivalled* machines exhibited at the coming exhibition of railroad appliances at Chicago in May and June next, in order to enable the railroad men to examine into the merits and reject what is called antidiluvian in that line? Please invite through the columns of your valuable paper the respective inventors of and dealers in patent track-layers to comply with the above request for their own and the railroad community's benefit."

Our correspondent's request is so reasonable that we heartily accede to it by the publication of his letter.

ADVERTISEMENTS of many, perhaps of most kinds, should be briefly worded, and made to attract attention by the use of a picture or pictures. Apart from the pleasure given by a well-executed engraving of a subject with some pretensions to beauty, as the examination of our columns demonstrates, the necessity of a tedious description of an ingenious piece of mechanism is often avoidable by the presentation of a pictorial illustration. As regards new designs in furniture and such things, their desirability cannot be made to appear so favorably in any other way than by that of their faithful representation in picture. The experience of advertisers generally bears out the truth of these statements, and no one can fail to have noticed accordingly, the wonderful multiplication of pictorial business announcements during recent years. The admirable work of the engraver appears increasingly with that of the ingenious and sagacious writer of advertisements, at once an embellishment

and a source of income to the public prints; while, in his turn, the printer's honored art is exercised in order to the best display of the words given him to print in type, and to produce the best possible impression from accompanying cuts. Perhaps no branch of industry than that including the multifarious interests of "railroading" illustrates the appropriateness of these remarks so strongly. While the dry goods merchant seems to be under no pressing obligation to accompany his announcement of a "tremendous sacrifice" in the sale of hosiery, with the picture of a pair of unbleached cotton stockings, the manufacturer of a new mechanical invention available in the improvement of railroad service, cannot too promptly acquaint the companies and the public with the same, by means of illustration as well as in words. Obviously this remark needs no expansion; and we will add only, that now and in the future, as throughout a long past, the publishers of the AMERICAN RAILROAD JOURNAL gladly give and will give place in its advertising columns, to pictures as well as lettter-press, and avail themselves of every means, pictorial and otherwise, to increase the public acquaintance with the results of ingenuity as applied to the improvement of means of communication.

MEAT SUPPLY AND CARRIAGE.

IN no department of trade is there more excitement at this time than in that of supplying flesh meats. The Americans, and the Europeans of the same stocks whence they have sprung, are a flesh-eating people. The nations of Western Europe which have shown the greatest aptitude for colonizing, trade and war are those who eat the most meat. It is not at all clear that their success in war, or in peace, is due to this diet as a cause; for it may happen that the indulgence in flesh is only one of many luxurious habits due to greater wealth, and this in its turn may be traceable to greater inherited energy, superior brain-power, inventive genius, or other race characteristics. However this may be, the prevailing passion is among individuals and nations to consume all the flesh foods that one can afford. The cost of beef has much to do with its consumption, and if the price rises above a certain range either in the United States or in England, the consumption droops, and other articles are in demand as substitutes. Beef and pork are the great staples of these animal foods—mutton, game and fish being local and limited in their use. Sheep, in fact, although there are millions in the country, are looked upon as a source of profit from their wool and skins rather than for their meat. Poultry and eggs, however, in France and England as well as in America, are the real competitors with the pastures, and take the first place among the middle class population of continental countries.

Heretofore it has been necessary to draw upon the pastures of our western States to supply the wants of the seaboard and manufacturing population. Fifty years ago cattle were driven on the hoof from Kentucky, Ohio and Indiana to the Atlantic markets. Presently the railroads began to be used for bringing them to the same points. Further and further west the rail-haul was pushed, and when the Mississippi River was reached it was supposed that the very utmost in that direction had been accomplished. It was not dreamed that the vast plains west of the Missouri River as far as the Rocky Mountains could ever be competitors with the fat pastures of central Kentucky, Ohio, or the Genesee Valley of New York. That is now the fact. Far beyond the great plains of Kansas, in the valleys of Colorado and Wyoming, on the prairies of Iowa and Dakota—the former grazing grounds of immense herds of wild bison—vast tracts of land are now devoted to grazing droves of more or less improved horned cattle with which to supply New York, Boston, or even European markets. The railroad alone has made this possible. Without that wonderful development of mechanical skill and organizing industrial capacity it could not have come to pass; and fresh beef would have been a luxury beyond the reach of common laborers. No more striking illustration of the far-reaching beneficence of railroads need be desired.

As might be expected, so great a revolution could not occur without some incidental injury to some one. The values of the far-famed "blue-grass" pastures of Kentucky and Ohio were temporarily depressed; they felt for a time the stress of competition with the cheaper lands of Iowa, Kansas and Texas, whose herds were taken to the same markets at but little greater cost of transportation. Vast fortunes were amassed by the rearing of cattle on cheap lands where neither rent, interest, fences nor shelter was required; and in fact where the sole expense was for mounted herders. So far has the capacity of rail transport been pushed in the matter of live-stock that it reached and spread over the unsold and unappropriated lands of the public domain west of the hundredth meridian. The result was that cattle by thousands have been grazed on public lands without paying anything for the privilege. The same was true of the public lands in Texas. Even the railroad lands, not being within fences, were frequently occupied by herds, with no other recompense than the freight money on the cattle. This was as if the public penitentiaries were to be employed in producing articles of dress in competition with private dealers, and giving away the product. Farmers who had expended a hundred dollars in labor or money in improving lands in Lancaster county, Penn., or in any of the adjoining States, had reason to complain that the public bounty was being perverted to diminish the value of their products. Under the absurd homestead law, which in practice inures chiefly to the benefit of land speculators, a man would be paid or hired to occupy a little tract adjoining a spring or stream of water, as his own farm, and thereby secure the free run of a hundred thousand acres around it for his herds to roam in. This filching process has kept on until now the number of such squatters on the public lands is so large as to interfere with the privileges of each other. Congress will be asked to make some more suitable provision than the existing law, which was originally framed for field-farming. The government ought long ago to have provided a system of stock ranges by leases of large tracts adjacent to water for all that wide expanse of country unsuited to ordinary agriculture between the hundredth meridian and the Sierra Nevada range.

During the past few weeks the newspapers have contained the record of numerous large transfers of beef-cattle—probably larger than was ever turned over, in trade, in the world before. The price of yearling heifers, which ranged from about two dollars at the time of the American settlement of California and Texas, has risen to twelve and fifteen dollars in these same regions.

The price of fatted cattle further east has necessarily felt the advance. At the same time are recorded the sales and leases of large tracts for grazing purposes. It now becomes politic to look up the owners of grazing tracts and secure their permission to graze. This is a healthy symptom. In other cases the purchasers have found it worth while to surround large parcels by "barb wire" fencing, all of which indicates that the business of the grazers is growing into a steady industry, and less and less like freebooting.

When beef-cattle can be laid down at the export cities for about six dollars per hundred pounds, live weight, or about twelve dollars dressed weight, they can be sent to London at a profit. That market is virtually insatiable with our beef—provided it can be landed in good order. Several collossal experiments are now being made in the carriage of dressed meat in "refrigerator" cars, apparently with the hope of success. One such establishment for slaughter at Victoria, in southern Texas, has an immense outfit. Two or more are in operation in Chicago, and at this time the shippers of live cattle are complaining to the Pool Manager that unless he can put up the rates on the dressed article their business will be ruined. A further revolution in meat transportation is impending. If the animals are slaughtered at the Western fields, thither must move the tanneries and the shoe and harness factories; and so the mighty railroad agency goes on upbuilding and destroying.

Speculating on Margins.

A DECISION was rendered in the Supreme Court of the United States at Washington, on the 16th inst., in the brokerage case of John H. Roundtree, plaintiff in error, against Ernest F. Smith and M. C. Lightner—error to the Circuit Court of the United States for the Western District of Wisconsin. This was a suit growing out of speculations in domestic produce in the City of Chicago, on "margins." It was brought by the firm of Smith & Lightner, brokers, against their customer, John H. Roundtree, to recover a balance alleged to be due them on account of purchases and sales of pork, lard, wheat, &c., made by his order. Roundtree set up the defence that the brokers had not actually bought or sold for him the commodities specified, but had merely speculated in "options" on his account; that these "options" were nothing but gambling contracts or bets on the future prices of the various articles of produce to which they related; that they were not designed to be actually performed by delivery, but the differences were to be adjusted and payments made and accepted according to the differences between the contract price and the market price at the date fixed for delivery; and that finally these gambling contracts were illegal and void. The plaintiff offered no proof that the particular contracts in controversy were really bets on future prices, but he did offer to show that a very large proportion of all the contracts made by members of the Chicago Board of Trade for the sale of produce were settled by the payment of differences; that nothing else was expected, and that the proportion of such betting contracts in which delivery of the merchandise was neither expected nor desired was so great in comparison with *bona fide* contracts as to justify the inference that the contracts made for him by his brokers were of the gambling kind. The Court held that evidence of what other people intended by other contracts of a similar character was not sufficient of itself to prove that the parties to these contracts intended to violate the law, or to justify a jury in making such a presumption. "It is also to be observed," the Court says, "that the plaintiffs in this case are not suing on the contracts, but for services performed and money advanced for the defendent at his request, and though it is possible that they might under some circumstances be so connected with the immorality of the contract as to be affected by it, they are certainly not in the same position as a party suing for the enforcement of the original agreement. The judgment of the Circuit Court n favor of the brokers is affirmed with interest."

Master Car-Builders' Association.

VARIOUS committees of the Master Car-Builders' Association have issued a series of circulars in the form of inquiries addressed to members. These inquiries are very close, and of great practical importance. We hope that the responses made to them will prove satisfactory to the committees, who will report at the annual convention to be held in Chicago, beginning June 12 next. The subjects upon which information is sought are, "The most Economical Capacity for Freight Cars"; "The Causes of Accidents to Train and Yard Men"; "Sharp Wheel Flanges"; and "Refrigerator Cars."

THE Chief of the Bureau of Statistics reports that during the month of March there arrived in the customs districts of Baltimore, Boston, Detroit, Huron, Minnesota, New Orleans, New York, Passamaquoddy, Philadelphia and San Francisco 44,483 passengers, of whom 38,730 were immigrants, 2956 citizens of United States returned from abroad, and 2797 aliens not intending to remain in the United States. Of this total number of immigrants there arrived from England and Wales, 3286; Ireland, 2518; Scotland, 905; Austria, 818; Belgium, 394; Bohemia, 305; Denmark, 846: France, 383; Germany, 14,759; Hungary, 1328; Italy, 3365; Netherlands, 384; Norway, 667; Russia, 338; Poland, 85; Sweden, 988; Switzerland, 1602; Dominion of Canada, 5667; and from all other countries, 192.

Imports of Foreign Dry Goods.

THE Imports of Foreign Dry Goods at New York for the month of March, were :—

ENTERED FOR CONSUMPTION.

	1881.	1882.	1883.
Manufs. of wool	$1,708,581	$1,934,245	$1,714,547
Manufs. of cotton	2,235,289	2,4c0,579	2,470,403
Manufs. of silk	2,526,867	3,277,286	2,349,251
Manufs. of flax	1,236,087	1,287,591	1,363,349
Miscell. dry goods	986,890	966,578	901,664
Total ent. for consumption	$8,693,654	$9,866,279	$8,799,214

WITHDRAWN FROM WAREHOUSE.

	1881.	1882.	1883.
Manufs. of wool	$859,651	$675,661	$939,687
Manufs. of cotton	388,152	297,364	511,901
Manufs. of silk	468,740	485,681	866,611
Manufs. of flax	531,983	376,223	418,777
Miscell. dry goods	243,702	262,820	279,202
Total withdr'n from warehouse	$2,492,228	$2,c97,749	$3,016,178
Add ent. for con	8,693,654	9,896,279	8,799,214
Total thrown on the market	$11,185,882	$11,964,028	$11,815,392

ENTERED FOR WAREHOUSING.

	1881.	1882.	1883.
Manufs. of wool	$722,143	$629,605	$1,135,311
Manufs. of cotton	382,787	240,211	549,162
Manufs. of silk	514,857	382,507	1,164,118
Manufs. of flax	344,461	277,439	324,783
Mis. dry goods	321,133	195,037	455,786
Total ent. for warehouse	$2,285,381	$1,731,399	$3 529,160
Add entered for consumption	8,693,654	9,866,279	8,799,214
Total ent. at port	$10,979,035	$11,597,678	$12,328,374

The Imports of Dry Goods at New York during the first quarter of the year, were :—

	1880.	1881.	1882.	1883.
January	$10,714,881	$10,128,486	$12,326,440	$13,345,312
February	15,691,575	13,085,298	16,004,077	13,73c.717
March	12,238,350	10,979,085	11,597,678	12,328,374
Total three months	38,644,806	34,192,819	40,528,195	39,404,403

A DAILY chicken train has been started on the Pennsylvania Railroad. They have a passenger Cochin the rear and a locomotive to pullet.

CORRESPONDENCE.

[COMMUNICATIONS are solicited for this department on all subjects pertaining to Railroads, Steam Navigation, Machinery, Manufactures, etc. No attention will be paid to communications unless the name and address of the writer is furnished us, though if desired, they will be withheld from publication. We assume no responsibility for statements made by correspondents, and we do not necessarily endorse ideas advanced by them. Under these conditions we think it of value to our readers to devote a liberal space to the free discussion by others—whose opinions may be at variance with our own—of subjects pertinent to this department of the AMERICAN RAILROAD JOURNAL.]

OUR CANADIAN LETTER.

[From our Special Correspondent.]

WEST INDIAN PHOSPHATE.

The works at Mona Island, West Indies, which were started about two years ago, are now well advanced, and with a full productive capacity of from 20,000 to 30,000 tons a year.

The guano is already in high favor in the United States, where it has been thoroughly tested, and is pronounced one of the best, if not the very best, of such material imported there.

The phosphate-rock, of which now considerable is raised, is in active request in England and on the Continent, especially the latter, where the more highly concentrated fertilizers are generally used.

The deposits or accumulations occur on the floors of the immense caves penetrating the coast line of the island—a tertiary coral rock—for ten or twelve miles almost uninterruptedly.

The thickness of the deposits is usually about four or five feet. The rock-phosphate, which is really phosphatized coral-rock, is found both as a massive stratum or shell underlying the bed guano, and also incrusting the masses of rock found imbedded in the guano. The deposits are very interesting from a scientific point of view. The crystalized calcite, anagonite, and gypsite are all found as pure as if from a primary formation. Many new combinations of phosphoric acid, giving rise to new series of phosphatic minerals, are quite abundant. The two examined and described by Professor Sheppard, of New Haven, as Monite and Monitite are bi-bassic and hold the highest combination of phosphoric acid known in any natural phosphate. They occur well crystalized. The Mona guano analyzes 52 to 68 per cent bone phosphate on a dry basis, and commercial samples of the rock 87 to 88 per cent bone phosphate. Both are singularly free from iron and alumina.

Many Indian relics and remains have been found in and under the deposits, viz: implements, pottery, shells, bones, etc. Some of these most interesting relics are in my possession. The work is under the personal supervision of Mr. J. G. Miller, of Ottawa, a practical scientist, who has done more than any other man in making known the value of the immense phosphate deposits of Canada.

TARIFF.

The following is the text of the Canadian Government amended tariff resolutions:—

6 to 12. Carriages: Buggies of all kinds, farm wagons, railway freight carts, pleasure carts or gigs and similar vehicles, 35 per cent ad valorem.

13. Railway cars and all other carriages not enumerated, and sleighs, cutters, wheel-barrows and hand-carts, thirty per cent ad valorem.

14 to 19. Children's carriages of all kinds, 35 per cent ad valorem; parts of carriages or other manufactured articles shall be charged with the same rate of duty, or a proportionate valuation, as that chargeable upon the finished article.

21. Strike out the words "20 per cent ad valorem," and insert the words, "the duty paid thereon, less 5 per cent of the amount so paid."

23. After the word "cottons" insert the words, "except jeans, coutiles, cambrics, silicias and casbans." Leather—To read as follows: Under the heading "Leather" in the item "sole and belting leather and all upper leather," after the word "sheep" and before the words "calf, tanned or dressed," strike out the words "buck and antelope," and substitute therefor the following item:

33. Glove leathers, viz.: Buck, deer, elk and antelope, tanned or dressed, colored or not colored, ten per cent ad valorem.

34. Drop.

49. Wools and wollens, to read as follows:—Under the heading "Wools and Woolens" in the first item, after the words "Worsted Yarns," strike out the words and figures, "under number 30," and after the word "hosiery" and before the word "seven" strike out the words, "of every description," and insert the words, "not elsewhere specified."

50. In the second item concerning "Clothing ready made," after the word "including" and before the word "Cloth Caps" insert the words "Knitted goods, viz: "Socks and Stockings."

51. Dress or Costume Cloths, serges and similar fabrics, under twenty-five inches wide and weighing not over three and a half ounces per lineal yard, either or both, 10 per cent ad valorem. Winceys to remain as they are in the present tariff.

52. Drop.

56 to 72. Agricultural implements read as follows: Mowing-machines, self-binding harvesters, harvesters without binders, binding attachments, reapers, sulky and walking plows and parts of the same. Harrows, scythes, horse and hand hay rakes, garden rakes of any material, grain seed drills, spades and shovels, hoes, hay, straw, manure, spading and mining forks, and all similar articles and parts thereof, 35 per cent ad valorem.

73 to 78. Portable machines, portable steam engines, threshers and separators, horse powers, portable saw mills and fanning mills and parts thereof, 35 per cent ad valorem.

82. Buckram. Strike out.

89. Jellies and Jams. To be five cents a pound, not six cents.

95. Oil Cloth—Strike out.

98. Vaseline, in bulk. To be four cents per pound, not five cents.

101. Files and rasps. 35 per cent ad valorem, instead of 30 per cent ad valorem.

After the item concerning "proprietary medicines," and before the item concerning "prunella" insert the following: "All medicinal preparations, whether chemical or otherwise, usually imported with the name of the manufacturer, shall have the true name of such manufacturer and the place where they are prepared permanently and legibly affixed to each parcel by stamp, label or otherwise; and all medicinal preparations imported without such names so affixed shall be forfeited."

BANK STATEMENT.

The following is the statement of circulation and specie for the month of March:—

Fractional notes	$176,183 10
Provincial notes	54,228 13
Dominion fours	298,064 00
Montreal issue	7,423,484 50
Toronto issue	5,248,366 50
Halifax issue	1,820,634 00
St John issue	740,846 25
Victoria issue	39,963 50
Total	$15,801,769 98
For February	$15,634,463.73
Excess of specie and guaranteed debtentures	1,350,846.02
Excess of unguaranteed debtentures	898,672.51
Total excess	$2,249,518 53

RAILROAD AND OTHER NOTES.

Mr. Wainright, assistant general manager, is in city. He has not yet heard anything definite or official regarding arrangements said to be going on between his road and the syndicate.

THE Midland Railway held their annual meeting in Peterboro yesterday. The report of the president showed that the affairs

of the company were in a most flourishing condition. Mr. G. A. Cox was re-elected president and general manager, and Mr. Gooderham vice-president. The following were elected directors: Messrs. G. A. Cox, Wm. Gooderham, J. R. Dundas, M. P., H. P. Dwyght, S. D. Egar, J. M. Ferris, M. P., F. W. Henshaw, Robert Jaffray, Thomas Kelso and E. S. Vinden.

Great credit is due to general superintendent D. Pottinger of Inter-Colonial Railway for having issued an order that hereafter any officer or employé of the Inter-Colonial Railway who is known to be intoxicated, whether on duty or not, will be at once dismissed from the service. Mr. Pottinger deserves, and will receive, the sincere gratitude of the public.

Much satifaction is expressed at the failure of the combination arrangements that have been represented as being nearly completed between the Grand Trunk and the Canadian Pacific Railway.

Sir Charles Tupper and Mr. Collingwood Schrieber last week examined the progress on the St. Charles embranchment of the Inter-Colonial, and made arrangements concerning the same between the Grand Trunk and Inter-Colonial.

Sir Leonard Tilly moved that the House go into committee to-morrow to consider the following resolution: That it is expedient to provide by law that a bounty of one dollar and fifty cents per ton be paid on all pig iron manufactured in Canada from Canadian ore, between the 1st of July, 1883, and 30th of June 1886 inclusive; and that a bounty of one dollar per ton be paid in like manner, on the same manufactured between July 1, 1886, and June 30, 1889 inclusive.

The Welland Railway Company will put in two new sidings at St. Catherines, enlarge their freight house, and make ample accommodations to meet expected business, caused by their arrangement with the Grand Trunk.

AMERICAN ENTERPRISE.

The American Brake Company of St. Louis, Mo., have established an agent in Canada. There is no doubt that when the merits of their brake are made known, they will be applied to all the Canadian railways.

The United States Wind and Engine Company of Batavia, Illinois, have also opened an agency in Canada, and will, no doubt, secure a share of Canadian trade.

It is thought that work will begin shortly on the Ottawa and Gatineau Railway; an engineering party are locating some ten miles for contract.

Canada is rejoicing over the return of H. R. H. the Princess Louise. His Excellency, the Govenor General and the Princess are beloved by the Canadian people, and justly so.

We are indebted to Mr. Francis J. Lynch, assistant chief of railways and canals, and Mr. Fred Jones, private secretary to the engineer-in-chief, for many favors. These gentlemen are courteous and kind to all who have business to transact with the department, and in consequence are most popular.

Sir Charles Tupper, Minister of railways and canals, leaves for England next month to act in the capacity of High Commissioner for Canada. Sir Charles is one of the ablest of Canada's able statesmen, and will be missed by his party, and by the people generally.

The Ottawa, Waddington and New York Railway, will, it is confidently expected, be commenced shortly.

"W."

OTTAWA, CANADA, April 17, 1883.

Patent Laws and Poor Inventors.

I. J. EDGE, IN "WOOD AND IRON."

SUPPOSING some very poor man should invent something useful, what should he do? Get it patented of course. Whether this would be prudent or not depends on circumstances, as neither the inventor himself, nor one in a thousand of his acquaintances might be able to tell whether the invention would be worth its own expenses or not, for but a very small percentage of inventors can form a correct idea of the value of an invention until after it has been tried by the test of the markets. Some may say, "But the cost is so very trifling that if the idea is worth anything it must more than cover the expense." The cost is trifling to some persons, but to others not quite so trifling; for there are hundreds of men who have first-class mechanical abilities, and who are clever, intellectual men in every way, but to whom the expense of securing a patent is a matter of great importance; and from this class most of the useful inventions have come. If the inventor writes to a patent agency the only information he gets is relative to procuring a patent; nothing with regard to its probable value will he receive. He must risk that, fees of course being the chief object of the patent agencies. And if the inventor spends his money in securing a patent on something that will be worthless when patented, that is his business, not theirs. What patent agency has ever replied to a client thus, "We can procure letters patent for you on the invention you describe, but we believe it to be an unprofitable investment, as we think you will not be able to realize from it the amount you must necessarily expend in procuring the patent." Such an answer might be honest enough, but it would be bad policy on the part of the patent agency, for most of their fees are obtained from inventions which are worthless when patented. It costs $40 to apply for a patent, which is lost if the patent is not granted, and $20 more when it is granted, making $60 in all, and then the patentee may not be able to sell it for anything. In case the inventor should have more than one idea, say several, conceived from time to time in his mind, he might not be able to select the best one to get patented. Should he disclose his ideas to the public some dishonorable person might steal them: he is in a dilemma; to whom shall he look for the information he requires? None will aid him. He must wait till fortune or time brings circumstances so that he can secure a patent, which he may never be able to accomplish. It is well known that inventors have lived in poverty for years, still hoping some time to be able to get their ideas advanced and reap the just rewards of their ingenuity. We may safely infer that many have died during this period of waiting, and their valuable secrets have been lost to the world forever. The great difference between civilized and enlightened man and semi-barbarous man is, that the former cultivates his ingenuity, while the latter either has none or does not cultivate what little he has. It is mainly due to the help that this country has given to her inventors that she now takes the lead of most other countries if not all, in mechanics. She has done much for the inventor, and has profited well by it. But more needs to be done yet—not to fill the pockets of successful inventors any fuller, but to help the poor inventor to get his invention into the market, to give the world the benefit of his ideas, and give him the reward he deserves. Now an author, artist or sculptor can have his work copy-righted for five or six dollars, while a mechanic who is obliged to work hard by the day, must expend at least sixty dollars, that is, ten times as much, before he can realize one cent for his invention. To a well-to-do man this sum is insignificant, but there are many who, with excellent intellects and natural ingenuity, combine a thorough knowledge of mechanics both practical and theoretical, but who cannot afford to run the risk of losing so much. As the patent laws are at present, the poor mechanic who makes an improvement in a tool, or invents a better one, for which he may not receive more than two or three hundred dollars, must pay fully as much to secure his rights as the more fortunate inventor whose patent right is worth millions. For the inventor who has a good idea, and the means to carry it through, the present patent laws cannot be much better, but those who are without means and who are unable to reach the protection of the laws, are not benefited much by them. Well, what can be done? The remedy is simple and the prescription is easily written. Let the government appoint a committee of competent and reliable examiners, to whom the poor man can disclose his ideas with safety, and have them recorded, then if the examiners deem his plans worthy of letters patent, let such be granted, the invention paying all expenses by affixing revenue stamps thereon until all such expenses have been paid. Such a system could injure no one and would greatly benefit the public at large, but more especially this country and her ingenious poor inventors.

RAILROAD EARNINGS.—MONTHLY.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
B., C. Rap. & N.:													
1881	167,750	124,510	148,551	184,680	165,630	205,912	174,351	209,112	221,801	221,748	202,180	232,812	2,259,037
1882	252,823	225,631	224,107	178,304	199,278	211,257	198,476	224,921	261,439	300,155	278,439	246,062	2,800,679
1883	197,402	187,001	252,913	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Central Pacific:													
1881	1,602,907	1,454,218	1,709,638	1,872,370	2,091,411	2,159,382	1,899,346	2,088,519	2,185,303	2,507,857	2,297,971	2,225,179	24,094,101
1882	1,839,469	1,720,675	1,969,737	2,054,687	2,342,298	2,229,105	2,076,648	2,350,557	2,495,445	2,424,529	2,139,299	2,020,349	25,662,757
1883	1,718,000	1,424,000	2,021,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chesapeake and Ohio:													
1881	162,540	184,389	228,479	227,343	252,235	241,135	225,096	262,858	247,144	236,306	230,022	203,562	2,702,762
1882	208,746	179,053	215,445	267,454	255,939	260,753	306,831	371,475	332,219	347,882	287,850	.....	.....
1883	244,142	250,287	270,676	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chicago and Alton:													
1881	487,890	461,641	529,915	558,190	548,556	635,860	676,205	769,751	774,790	771,844	672,380	646,812	7,557,741
1882	585,830	517,897	588,700	564,861	559,577	617,250	702,635	856,398	912,692	858,674	749,915	701,066	8,215,495
1883	637,804	538,537	671,576	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chicago and Northwestern:													
1881	1,240,664	963,204	1,178,795	1,474,612	1,879,006	2,306,440	1,983,032	2,315,164	2,292,676	2,341,098	2,019,038	1,855,477	21,849,209
1882	1 644,935	1,474,176	1,672,931	1,668,741	2,110,947	2,022,700	2,025,736	2,099,755	2,497,053	2,592,100	2,069,287	1,718,379	23,828,973
1883	1,362,704	1,264,907	2,059,700	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chicago, Burlington and Quincy:													
1881	1,307,948	1,034,821	1,418,149	1,574,371	1,679,455	2,083,803	1,883,358	2,173,945	2,262,981	2,031,001	1,816,133	1,905,490	21,176,455
1882	1 658,834	1,457,300	1,566,217	1,530,838	1,505,461	1,437,164	1,625,006	2,086,858	2,186,400	2,270,444	2,199,421	2,027,060	22,550,804
1883	1,625,680	1,611,021	2,347,089	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chicago, Milwaukee and St. Paul:													
1881	990,847	682,717	916,989	1,259,946	1,538,491	1,729,811	1,568,706	1,678,361	1,644,676	1,591,052	1,569.597	1,854 269	17,025,462
1882	1,434,536	1,376,376	1,561,386	1,518,000	1,629,000	1,620,000	1,465,000	1,545,000	1,950,000	2,251,000	2,072,000	1,964,000	20,386,726
1883	1,359,000	1,258,000	2,044,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chicago, St. Paul, Minneapolis and Omaha:													
1881	257,786	158,594	251,648	261,211	350,124	404,562	383,202	385,586	373,370	379,029	592,921	432,615	3,981,296
1882	327,498	333,200	413,200	356,558	406,420	363,109	331,480	394,555	482,997	546,671	317,595	375,796	4,973,052
1883	302,700	277,900	415,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denver and Rio Grande:													
1881	307,476	317,681	398,493	433,111	514,767	584,230	548,284	606,193	589,287	638,432	547,055	626,728	5,980,488
1882	488,599	407,000	521,500	559,917	614,298	537,462	495,797	574,040	595,306	630,598	512,965	443,000	6,349,857
1883	418,300	433,400	521,600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hannibal and St. Joseph:													
1881	154,401	122,874	176,356	190,812	172,950	190,740	201,899	210,240	215,103	231,913	195,607	194,336	2,230,961
1882	125.601	152,691	185.368	150,481	151,999	147,526	184,609	254,569	239,732	238,563	249 252	239,891	2,303,388
1883	179,591	180,887	228,410	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois Central:													
1881	631,281	524,490	557,789	662,493	673,259	803,887	720,004	868,407	828,847	815,238	737 218	763,475	8,586,397
1882	1,019,153	987,998	905.474	640,014	674,749	663,746	752,251	813,600	828,238	865,325	752,144	697,051	8,831,281
1883	1,058,620	931,971	1,106,658	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indiana, Bloomington and Western:													
1881	90,283	83,261	192,085	203,677	200,064	199,846	190,125	272,174	247,232	225,678	200,450	192,622	2,487,569
1882	105.824	175,755	204,538	205,934	182,554	186,133	206,072	278,814	273,100	269,046	256,998	205,212	2,641,675
1883	248,142	202,931	268,801	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisville and Nashville:													
1881	812,118	805,124	947,959	855,704	828,726	1,227,885	817,135	876,192	951,566	1,002,950	1,065.223	1,153,779	11,344,361
1882	964,527	960,315	1,068,834	953,603	958,130	1,215,490	1,063,765	1,043,912	1,114,513	1,215,932	1,192,390	1,221,509	12,981,432
1883	1,118 735	1,015,000	1,135,507	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mobile and Ohio:													
1881	224,347	216,768	230,916	163,551	145,803	136,517	135,546	160,789	210,262	256,924	262,986	258,212	2,403,224
1882	159,676	158,590	148,166	141,937	134,378	136,184	135,174	137,475	157,874	267,433	295,110	307,643	2,179,666
1883	216,608	172,200	180,113	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nashville, Chattanooga and St. Louis:													
1881	178,143	190,866	207,710	183,525	104,430	154,549	150,430	168 317	179,979	172,121	152,059	173,127	2,075,258
1882	170,753	174,974	177,336	154,155	135,556	119,074	160,991	168,304	168,999	180,319	181,336	186,352	1,933,047
1883	197,388	195,262	206,164	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New York and New England:													
1881	189,749	173,614	212,019	216,913	217,185	231,518	246,821	280,524	299,573	261,206	240,764	240,063	2,809,255
1882	213,840	217,261	265,222	261,044	289,722	295,392	298,441	346,490	338,347	310,145	276,183	261,082	3,408,169
1883	258,266	231,741	284,869	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New York, Lake Erie and Western:													
1880	1,296,381	1,252,218	1,644,958	1,643,151	1,592,544	1,661,812	1,580,976	1,606,874	1,786,417	1,899,010	1,799,338	1,726,788	19,149,361
1881	1,443,437	1,425,765	1,847,261	1,709,057	1,776,891	1,794,982	1,787,081	1,772,895	1,734,200	1,814,866	1,715,469	1,5~1,208	20,393,112
1882	1,318,097	1,304,757	.....	.....	.....	.....	.....	.....	.....	1,819,010	1,818,824	1,691,404	20,203,469
1883	1,524,869	1,283,616	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Northern Central:													
1881	386,157	382,657	452,906	487,273	465,588	487,287	440,811	498,008	429,565	449,664	487,160	476,622	5,443,697
1882	407,368	413,551	430,194	435,129	482,607	482,752	509,683	667,488	592,435	550,225	526,685	490,003	5,800,176
1883	499,252	486,865	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Northern Pacific:													
1881	116,508	78,803	162,984	216,210	312,705	412,024	393,260	434,085	534,363	583,955	475,610	439,724	4,044,576
1882	245,369	268,935	373,141	451,023	616,231	704,617	694,067	727,215	772,838	829,831	761,324	564,749	7,009,344
1883	392,035	373,091	583,400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philadelphia and Erie:													
1881	224,303	225,501	285,573	293,323	343,792	350,585	291,669	303,849	276,522	292,392	284,078	282,772	3,454,309
1882	252,727	245,246	265,311	277,851	341,415	347,614	377,206	20,3204	386,455	397,164	369,583	335,513	4,011,413
1883	319,720	295,638	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Louis and San Francisco:													
1881	212,435	178,324	262,050	265,298	283,399	260,254	252,333	286,373	279,064	308,569	284,320	287,914	3,160,245
1882	256,784	244,654	274,959	242,806	253,419	240,177	318,613	381,637	336,805	360,900	331,490	339,424	3,582,811
1883	278,321	236,278	351,689	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Louis, Alton and Terre Haute:													
1881	175,725	166,012	201,137	197,447	172,177	165,896	165,393	189,180	196,368	204,338	169,795	171,127	2,112,801
1882	168,987	149,619	177,609	157,450	162,842	142,742	192,017	236,137	217,659	229,962	206,040	184,526	2,245,320
1883	193,614	177,717	204,762	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Louis, Iron Mountain and Southern:													
1881	570,957	560,791	704,002	548,300	479,075	474,302	533,512	644,386	708,325	719,239	687,271	709 498	7,319,744
1882	516,370	501,127	585,008	581,977	519,120	529,700	515,519	675,981	724,160	809,394	843,973	781,305	7,581,635
1883	665,258	522,781	632,228	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Paul, Minneapolis and Manitoba:													
1881	254,187	159,482	320,962	425,685	382,642	405,322	387,488	414,954	485,736	605,708	508,530	528,262	4,878,960
1882	305,461	418 358	531,071	570,890	858,902	856,417	853,296	801,759	832,776	979,057	913,335	753,515	8,764,770
1883	489,763	389,612	729,844	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas and Pacific:													
1881	281,176	260,781	319,928	295,066	281,782	285,405	328,063	381,331	345,790	419,203	369,521	401,058	3,921,569
1882	323,987	278,535	343,442	359,543	409,228	384,713	367,215	439,918	470,613	541,901	619,655	641,044	5,143,179
1883	534,529	416,040	526,901	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union Pacific Railway:													
1881	1,339,799	1,374,740	1,674,860	1,766,894	2,319,238	2,884,774	2,528,826	2,638,659	2,844,357	3,169,530	2,723,608	2,267,004	29,776,899
1882	2,186,020	1 835,620	2,226,832	2,462,004	2,491,590	2,508,453	2,301,000	2,762,107	2,949,112	3,158,337	2,821,070	2,294,000	30,088,109
1883	1,986,535	1,743,207	2,335,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wabash, St. Louis and Pacific:													
1881	865,339	813,374	1,109,399	967,033	1,148,669	1,330,044	1,120,615	1,542,124	1,497,246	1,406,029	1,372,360	1,294,657	14,467,790
1882	1,220,965	1,134,768	1,313,776	1,378,191	1,304,864	1,149,632	1,418,837	1,772,544	1,682,382	1,595,680	1,525,715	1,331,952	16,738,360
1883	1,307,783	1,070,758	1,479,236	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

RAILROAD, TRAMWAY AND CANAL DIVIDEND STATEMENT.

Showing the amount of Stock Outstanding, the Dividend Periods and the date of last Dividend.

Marked thus (*) are leased roads.		Stock outstanding.	Divide'd Periods.	Last Dividend Payable.
Albany and Susquehanna*	100	3 500.000	semi-an	Jan. 1, '83 2
Atchison, Topeka and Santa Fe	100	56,932,200	q'arterly	May 15, '83 1½
Atlanta and Charlotte Air Line	100	1,700,000	semi-an	Mar. 5, 83 2
Atlanta and West Point	100	1,232,200	semi-an	Feb. 1, '83 6½
Atlantic and St. Lawrence*	100	5,484,000	semi-an	Mar. 15, '83 3½
Augusta and Savannah	100	1,032,200	semi-an	Dec. 4, '82 3½
Avon, Genesee & Mount Morris*	100	225,000	semi-an	Jan. 1, '82 3
Baltimore & Hanover	100	86,805	.....	Apl. 9, '83 3
Baltimore and Ohio	100	14,792,566	semi-an	May 1, '83 5
" " pref.	100	5,000,000	semi-an	Jan. 1, '83 3
Washington Branch	100	1,650,000	q'arterly	May 1, '83 5
Berkshire*	100	600,000	annual..	Apl. 2, '83 1¾
Boston and Albany	100	20,000,000	q'arterly	Mar. 31, '83 2½
Boston & New York Air Line pref.	100	2,795,227	semi-an	Apl. 1, '83 2
Boston, Concord & Montreal pref*	100	800,000	semi-an	Nov. 15, '82 3
Boston and Lowell	500	3,798,000	semi-an	Jan. 1, '83 4½
Boston and Maine	100	7,000,000	semi-an	Nov. 15, '82 4
Boston & Providence	100	4,000,000	semi-an	Nov. 1, '82 3
Attleborough Branch	100	131,700	semi-an	Jan. 1, '83 3½
Boston, Revere Beach & Lynn	100	419,400	semi-an	Jan. 1, '83 3
Buffalo, New York & Erie*	500	950,000	semi-an	Dec. 1, '82 3
Buffalo, New York & Philadelphia pf.	50	6,000,000	q'arterly	Mar. 1, '83 1½
Camden & Atlantic	50	377,400	q'arterly	Nov. 1, '82 4
" " pref.	100	880,650	q'arterly	Nov. 1, '82 3
Camden & Burlington County	100	381,925	semi-an	Jan. 1, '83 3
Canada Southern	100	15,000,000	.....	Feb. 1, '81 2½
Cape May & Millville*	50	447,000	semi-an	Dec. 1, '82 3
Catawissa	50	1,159,500	annual	Oct. 1, '82 2½
" pref	20	2,200,000	semi-an	Nov. 16, '82 3½
" new pref.	50	1,000,000	semi-an	Nov. 16, '82 3½
Cayuga and Susquehanna*	50	589,110	semi-an	Jan. 1, '83 4½
Cedar Rapids & Missouri River*	100	6,850,400	q'arterly	May 1, '83 1
" " " pref.	100	769,600	semi an	Feb. 1, '83 3½
Central of Georgia	100	7,500,000	semi-an	Dec. 26, '82 4
Central Ohio*	50	2,437,950	semi-an	Jan. 31, '83 3
" pref.	50	411,550	semi-an	Jan. 31, '83 3
Central Pacific	150	59,275,500	semi-an	Feb. 1, '83 3
Cheshire preferred	100	2,100,000	semi-an	Jan. 10, '83 1½
Chicago and Alton	100	12,504,600	semi-an	Mar. 1, '83 4
" " pref	100	2,425,400	semi-an	Mar. 1, '83 4
Chicago, Burlington & Quincy	100	69,814,191	q'arterly	Mar. 15, '83 2
Chicago, Iowa & Nebraska*	100	3,916,200	semi-an	Jan. 1, '83 4
Chicago, Milwaukee & St. Paul	100	27,904,261	semi-an	Apl. 16, '83 3½
" " " pref.	100	16,447,483	semi-an	Apl. 16, '83 3½
Chicago & Northwestern	100	16,737,655	semi-an	Dec. 27, '82 3½
" " pref.	100	22,210,844	q'arterly	Mar. 27, '83 2
Chicago, Rock Island & Pacific	100	41,960,000	q'arterly	May 1, '83 1¾
Chicago & West Michigan	100	6,796,800	semi-an	Feb. 15, 83 3
Chicago, St. Paul, Minn. & Omaha pf.	100	11,396,600	q'arterly	Apl. 20, '83 1¾
Cincinnati, Hamilton & Dayton	100	3,500,000	semi-an	Jan. 5, '83 3
Cincinnati, Ind., St. Louis & Chicago.	100	8,000,000	q'arterly	Jan. 15, '83 1½
Cincinnati, Sandusky & Cleveland pf.	50	428,850	semi-an	Nov. 1, '82 3
Cleveland Columbus, Cincin. & Ind.	100	14,991,800	.....	Feb. 1, '83 2
Cleveland & Pittsburg*	50	11,235,430	q'arterly	Mar. 1, '83 1¾
Columbus & Xenia*	50	1,786,200	q'arterly	Mar. 10, '83 2
Columbus, Hocking Valley & Toledo	100	10,316,500	.....	Jan. 10, '83 2½
Concord	50	1,500,000	semi-an	May 1, '83 5
Concord and Portsmouth*	100	350,000	semi-an	Jan. 1, '83 3½
Connecticut & Passumpsic Rivers	100	2,244,400	semi-an	Feb. 1, '83 3
Connecticut River	100	2,370,000	semi-an	Jan. 1, '83 4
Cumberland Valley	50	1,292,950	q'arterly	Apl. 2, '83 2½
" 1st pref.	50	241,900	semi-an	Apl. 2, '83 4
" 2d pref.	50	243,000	semi-an	Apl. 2, '83 4
Danbury & Norwalk	50	600,000	semi-an	Apl. 1, '83 2½
Dayton and Michigan*	50	2,402,573	semi-an	Apl. 1, '83 1¾
" " pref.	50	1,211,250	q arterly	Apl. 1, '83 2
Delaware*	25	1,468,940	semi-an	Jan. 2, '83 3
Delaware & Bound Brook*	100	1,652,000	q'arterly	May 14, '83 1¾
Delaware, Lackawanna & Western	50	26,200,000	q'arterly	Apl. 20, '83 2
Denver & Rio Grande	100	33,000,000	q'arterly	Jan. 14, '82 1½
Detroit, Lansing & Northern	100	1,825,600	semi-an	Feb. 15, '83 3
" " " pref.	100	2,503,380	semi-an	Feb. 15, '83 3
Dubuque & Sioux City*	100	5,000,000	semi-an	Apl. 16, '83 3
East Pennsylvania*	50	1,709 550	semi-an	Jan. 18, '83 3
East Mahanoy*	50	392,950	semi-an	Jan. 1, '83 3
Eastern (N. H.)	100	492,500	semi-an	Dec. 15, '82 2½
Eel River	100	3,000,000	q'arterly	Mar. 5, '83 1
Elmira & Williamsport*	50	500,000	semi-an	Nov. 1, '82 1½
" " pref.	50	500,000	semi-an	Jan. 1, '83 3½
Erie and Pittsburgh*	50	1,998,400	q'arterly	Mar. 10, '83 1¾
European & North American	100	2,500,000	semi-an	Apl. 1, '83 2½
Evansville & Terre Haute	50	3,100,000	.....	Jan. 1, '83 6b
Fitchburg	100	4,950,000	semi-an	Jan. 1, '83 3
Flint & Pere Marquette pref.	100	6,500,000	semi-an	Jan. 15, '83 3½
Fort Wayne & Jackson pref.	100	2,284,800	.....	May 4, '82 2
Georgia	100	4,200,000	q'arterly	Apl. 15, '83 2½
Granite	100	1,250,000	semi-an	Jan. 1, '83 3
Greenwich & Johnsonville	100	118,000	semi-an	Jan. 1, '83 4
Hannibal & St. Joseph pref.	100	5,083,024	semi-an	Feb. 15, '83 3
Harrisburg & Lancaster	50	1,182,500	semi-an	Jan. 10, '83 3½
Hartford & Connecticut Western	100	2,700,000	.....	Dec. 1, '82 1½
Housatonic pref.	100	1,180,000	q'arterly	Apl. 15, '83 2
Illinois Central	100	39,000,000	semi-an	Mar. 1, '83 4
Iowa Falls & Sioux City*	100	4,623,500	q'arterly	Mar. 1, '83 1½
Iowa R.R.& Land Co.	100	7,620,000	q'arterly	May 1, '83 1½
Jeffersonville, Madison & Indi'apolis.	100	2,000,000	q'arterly	May 1, '82 1¾
Joliet and Chicago*	100	1,500,000	q'arterly	Apl. 1, '83, 1¾
Kansas City, Fort Smith & Gulf	100	4,648,000	.....	Feb. 15, '83 3
" " " pref.	100	2,750,000	semi-an	Feb. 15, '83, 4
Lake Shore & Michigan Southern	100	49,466,500	q'arterly	May 1, '83, 2
" " (guar.)	100	533,500	semi-an.	Feb. 1, '83, 5
Lawrence*	50	450,000	q'arterly	Apl. 1, '83, 2

Marked thus (*) are leased roads.		Stock outstanding.	Divide'd Periods.	Last Dividend Payable.
Lehigh Valley	50	27,496,895	q'arterly	Apl. 16, '83 2
" pref.	50	106,300	q'arterly	Apl. 16, '83 2½
Little Miami	50	4,637,300	q'arterly	Mar. 10, '83 2
Little Schuylkill*	50	2,646,100	semi-an.	Jan. 12, '83 3½
Long Island	50	10,000,000	q'arterly	May 1, '83 1
Louisville & Nashville	100	25,000,000	semi-an.	Feb. 1, '82 3
Lowell & Andover	100	500,000	semi-an.	Jan. 1, '83 3½
Lykens Valley	20	600,000	q'rterly.	Jan. 3, '83 2½
Maine Central	100	3,603,300	semi-an.	Feb. 15, '83 2½
Manchester & Lawrence	100	1,000,000	semi-an.	May 1, '83 5
Manhattan	100	13,000,000	.....	.....
" 1st pref.	100	6,500,000	q'rterly.	Apl. 2, '83 1½
" 2d pref.	100	6,500,000	q'rterly.	Jan. 2, '83 1½
Marquette, Houghton & Ontonagon	100	2,756,600	.....	Feb. 15, '83 4
" " pref.	100	2,259 026	semi-an.	Feb. 15, '83 4
Massawippi*	100	400,000	semi-an.	Feb. 1, '83 3
Metropolitan	100	6,500,000	q'rterly	Oct. 2, '82 1½
Michigan Central	100	18,738,204	semi-an.	Feb. 1, '83 2
Middlesex Central	100	280,000	semi-an.	Feb. 1, '83 3
Mill Creek & Minehill*	50	323,000	semi-an.	Jan. 1, '83 5
Mine Hill & Schuykill Hav*	50	4,022,500	semi-an.	Jan. 12, '83 3½
Missouri Pacific	100	30,000,000	q'rterly.	Apl. 2, '83 1¾
Morris and Essex	50	15,000,000	semi-an.	Jan. 2, '33 3½
Mount Carbon & Port Carbon	50	282,350	semi-an.	Jan. 2, '83 6
Nashua and Lowell	100	800,000	semi-an.	Nov. 1, '82 4
Nashua & Rochester	100	1,305,800	semi-an.	Apl. 2, '83 1½
Nashville & Decatur	100	1,356,632	semi-an.	Dec. 10, '82 3
Nashville, Chattanooga & St. Louis	25	6,670,325	semi-an.	Apl. 20, '82 1½
Naugatuck	100	2,000,000	semi-an.	Jan. 15, '83 5
Nesquehoning Valley*	50	1,300,000	semi-an.	Mar. 1, '83 3
New Castle & Beaver Valley*	50	700,000	q'rterly.	Jan. 1, '83 —
New London Northern*	100	1,500,000	q'rterly.	Apl. 1, '83 1½
New York Central & Hudson River	100	89,428,330	q'rterly.	Apl. 15, '83 2
New York and Harlem	100	8,500,000	semi-an.	Jan. 2, '83 4
" " pref.	100	1,500,000	semi-an.	Jan. 2, '83 4
" City Line	—	.....	annual	Apl. 2, '83 2
New York, Lackawanna & Western	100	10,000,000	q'rterly	Apl. 2, '83 1¼
New York, Lake Erie & Western	100	77,087,600	.....	.....
" " " pref.	100	7,987,500	annual..	Jan. 2, '83 6
New York, New Haven & Hartford	100	15,500,000	semi-an.	Jan. 2, '83 5
New York, Ontario & Western pref.	100	2,000,000	.....	Mar. 1, '83 12
New York, Providence & Boston	100	3,000,000	q'rterly.	Feb. 10, '83 2
Niagara Bridge & Canandaigua*	100	1,000,000	semi-an.	Apl. 1, '83 3
North Carolina*	100	3,000,000	semi-an.	Mar. 1, '83 3
" " pref.	100	1,000,000	semi-an.	Mar. 1, '83 3
Norfolk & Western pref.	—	15,000,000	q'rterly.	Dec. 15, '82 $1
Northeastern (South Carolina)	50	899,350	.....	Apl. 2, '83 3
North Pennsylvania	50	4,399,750	q'rterly.	May 26, '83 1¾
Northern Central	50	6,500,000	semi-an.	Jan. 15, '83 4
Northern New Hampshire	100	3,068,400	semi-an.	Dec. 1, '82 3
Northern Pacific pref.	100	41,909,132	.....	Jan. 15, '83 11.1
Norwich & Worcester*	100	2,604,400	semi-an.	Jan. 10, '83 5
Oregon & Transcontinental	100	40,000,000	q'rterly.	Apl. 10, '83 1½
Old Colony	100	7,533,800	semi-an.	Jan. 1, '83 3½
Oregon Improvement Co.	100	5,000,000	semi-an.	Mar. 1, '83 3½
Oregon Railway & Navigation Co.	100	13,000,000	q'rterly.	May 1, '83 2½
Oswego & Syracuse	100	1,320,400	semi-an.	Feb. 1, '83 4½
Panama	100	7,000,000	semi-an	Jan. 10, '83 6½
Paterson & Hudson*	100	630,000	semi-an.	Jan. 3, '83 4½
Paterson & Ramapo	100	248,000	semi-an,	July 1, '82 4
Pemberton & Hightstown*	20	342,150	semi-an.	Jan. 1, '83 3
Pennsylvania	50	85,361,300	semi-an.	Nov. 29, '82 4½
Pennsylvania Co.	50	20,000,000	annual	Dec. 15, '82 4
Peoria & Bureau Valley*	100	1,500,000	semi-an.	Feb. 1, '83 4
Philadelphia, Ger. & Norrist'n*	50	2,231,900	q'rterly.	Mar. 3, '83 3
Philadelphia and Trenton	100	1,259,100	q'rterly.	Apl. 10, '83 2½
Philade phia, Wilmington and Balt.	50	11,795,050	semi-an.	Jan. 2, '83 4
Pittsburgh, Fort Wayne & Chicago*	100	19,714,285	q'rterly.	Apl. 2, '83 1¾
" Special Imp.	100	7,698,900	q'rterly.	Apl. 3, '83 1¾
Pittsfield & North Adams	100	450,000	semi-an.	Jan. 1, '83 2½
Portland, Saco & Portsmouth	100	1,500,000	semi-an.	Jan. 15, '83 3
Providence & Worcester	100	2,500,000	semi-an.	Jan. 1, '83 3
Rensselaer & Saratoga*	100	6,854,100	semi-an.	Jan. 2, '83 4
Richmond & Danville	100	5,000,000	q'rterly.	Aug. 15, '82 2
Richmond & Petersburg	100	1,009,300	semi-an.	Aug. 1, '82 2
Rochester & Genesee Valley*	100	555,200	semi-an.	Jan. 1, '83 3
Rome, Watertown & Ogdensburg	100	5,293,900	.....	Jan. 1, '83 3
Rutland preferred	100	4,000,000	semi-an.	Sept. 1, '82 1
Spuyten Duyvil & Port Morris	100	989,000	semi-an.	Jan. 2, '83 4
St. Louis, Alton & Terre Haute pref.	100	2,468,406	.....	May 1, '83 7
St. Louis & San Francisco 1st pref.	100	4,500,000	semi-an.	Feb. 1, '83 3½
St. Louis, Jacksonville & Chicago	100	1,293,000	.....	Aug. 1, '82 4½
" " " pref.	100	1,034,000	.....	Aug. 1, '82 4½
St. Paul & Duluth pref.	100	5,121,700	semi-an.	Jan. 1, '83 3½
St. Paul, Minneapolis & Manitoba	100	20,000,000	q'rterly.	May 1, '83 2
Schuylkill Valley*	50	576,050	semi-an.	Jan. 15, '83 2½
Seaboard & Roanoke	100	1,302,200	semi-an.	Nov. 1, '82 5
Shamokin Valley & Pottsville	50	869,450	semi-an.	Feb. 1, '83 3
Shore Line*	100	1,000,000	semi-an.	Jan. 6, '83 4
Sioux City & Pacific pref.	100	169,000	semi-an.	Apl. 2, '83 3½
South Branch (N. J.)*	100	438,300	semi-an.	Jan. 2, '83 3
South Western (Ga.)*	100	5,031,700	semi-an.	Dec. 26, '82 3½
Stockbridge & Pittsfield*	100	448,700	q'rterly.	Jan. 2, '83 1½
Sunbury & Lewistown	50	161,000	semi-an.	Apl. 2, '83 3
Syracuse, Binghamton & New York*	100	2,500,000	semi-an.	Feb. 1, '83 2
Terre Haute & Indianapolis	100	1,088,150	semi-an.	Feb. 1, '83 4
Union Pacific	100	60.854,105	q rterly.	Apl. 1, '83 1¾
United Companies of New Jersey*	100	21,050,400	q'rterly.	Apl. 10, '83 2½
Utica, Shenango & Susq. Valley	100	4,000,000	semi-an.	Nov. 1, '82 3
Utica and Black River	100	1,772,000	semi-an.	Mar 31, '83 2
Vermont and Massachusetts	100	3,050,000	semi-an.	Apl. 7, '83 3
Vermont Valley	100	1,000,000	annual	Jan. 2, '83 3

FINANCIAL AND COMMERCIAL DEPARTMENT.

NEW YORK, MONDAY, APRIL 23, 1883.

MONEY on call on stocks as collateral during the day was loaned at 5 per cent, but in the last hour of business the rate fell to 4½ and 4 per cent.

The posted rates for foreign exchange were 4.83½ and 4.86. The actual rates were as follows: Sixty days, 4.82¾@4.83; demand, 4.85@4.85¼; cables, 4.85½@¾; commercial bills 4.81@4.81½. Continental bills were as follows, viz: Francs, 5.21¼ and 5.18¾@5.19⅜; reichsmarks, 94½ and 94 15-16; guilders, 40 and 40¼.

It is stated that the New York, Chicago and St. Louis Railway Company is about to make a second mortage for $10,000,000, of which $4,000,000 will be issued immediately, and the remainder reserved to meet future requirements.

The certificate of incorporation of the Home Bank was filed in the office of the County Clerk on the 23d inst. The capital stock is placed at $125,000, with provisions for increase.

It has been decided to increase the bonded indebtedness of the Pittsburgh Belt Street Railroad Company from $10,000 to $30,000, and that of the Twin City, the Pittsburgh and South End, and the Twelfth Street and Arlington Avenue street railway companies from $50,000 to $100,000.

Judgments aggregating $70,000, were entered in the U. S. Circuit Court at Little Rock, Ark., on the 19th inst. against the Memphis and Little Rock Railroad Company, as re-organized, for interest on mortage bonds held by citizens of New York and New Hampshire.

The gross earnings of the Chicago, Milwaukee and St. Paul Railway Company for the year ending December 31, 1882, were $20,386,725.86, the operating expenses $12,186,073.21, and the net earnings $8,200,652.65; for the year ending December 31, 1881, the gross earnings were $17,025,461.66, the operating expenses $10,317,931.14, and the net earnings $6,707,530.52—showing an increase in gross earnings of $3,361,264.20, with an increase in operating expenses of $1,868,142.07, making the increase in net earnings $1,493,122.13. Interest on mortgage bonds in 1882 $4,786,053.50; do. in 1881, $4,127,389.12—increase, $658,665.38. Number of passengers carried in 1882, 3,956,814; tons of freight moved, 5,127,767.

The gross earnings of the Nashville, Chattanooga and St. Louis Railway for the month of March, 1883, were $206,163.90, the operating expenses $115,664.48, and the net earnings $90,499.42; for the month of March, 1882, the earnings were $177,336.15, the expenses $94,397.44, and the net earnings $82,938.71—showing an increase in gross earnings of $28,827.75, with an increase in expenses of $21,267.04, making the increase in net earnings $7,560.71. For the nine months ending March 31, 1883, the gross earnings were $1,780,347.66, the operating expenses $987,689.06, and the net earnings $729,658.60—an increase, compared with the corresponding period of the previous year, of $151,691.19.

The gross earnings of the Chicago, Burlington and Quincy Railroad Company for the month of March, 1883, were $2,347,088.66, the expenses $960,073.18, and the net earnings $1,387,015.48; for the month of March, 1882, the gross earnings were $1,566,217.08, the expenses $929,200.24, and the net earnings $637,016.84—showing an increase in gross earnings of $780,871.58, with an increase in expenses of $30,872.94, making the increase in net earnings $749,998.64. The increase in freight earnings was $671,722.03, and in passenger earnings $122,690.03. For the first three months of the current fiscal year (January 1 to March 31, 1883,) the net earnings were $2,917,135.61, against $2,018,930.40 for the corresponding period of the previous year, an increase of $898,205.21.

The gross earnings of the New York, Lake Erie and Western Railroad Company for the month of February, 1883, were $1,283,615.59, the working expenses $1,049,815.60, and the net earnings $233,799.99; for the month of February, 1882, the gross earnings were $1,304,757.54, the working expenses $1,013,057.39, and the net earnings $291,700.15—showing a decrease in gross earnings of $21,141.95, with an increase in working expenses of $36,758.21, making a decrease in the net earnings of $57,900.16. From October 1, 1882, to February 28, 1883 (being the first five months of the current fiscal year), the gross earnings were $8,137,722.17, the working expenses $5,757,071.81, and the net earnings $2,380,650.30; for the corresponding period of the previous year the gross earnings were $7,725,297.71, the working expenses $5,604,172.16, and the net earnings $2,121,125.55—showing an increase in gross earnings of $412,424.46, with an increase in working expenses of $152,899.71, making the increase in net earnings $259,524.75.

The gross earnings of the Richmond and Danville system for the month of March, 1883, were $352,414, the operating expenses $178,491.67, and the net earnings $173,922.33; for the month of March, 1882, the gross earnings were $339,466.72, the operating expenses $226,541.91, and the net earnings $112,924.81—showing an increase in gross earnings of $12,947.28, with a decrease in operating expenses of $48,050.24, making the increase in net earnings $60,997.52.

The earnings of the Union Pacific Railway for the month of February, 1883, were $1,743,206.70, the expenses $1,068,737.90, and the surplus $674,468.80; for the month of February, 1882, the earnings were $1,835,620.15, the expenses $1,312,223.35, and the surplus $523,396.80—showing a decrease in earnings of $92,413.45, with a decrease in expenses of $243,485.45, making an increase in the surplus of $151,072.

The anthracite coal tonnage of all the carrying companies for the month of March amounted to 2,375,512 tons, being an increase, as compared with the corresponding month last year, of 267,469 tons. This tonnage was made up of the following shipments: Philadelphia and Reading Railroad, 536,489 tons; Lehigh Valley, 509,061; Central Railroad of New Jersey, 366,061; Delaware, Lackawanna and Western, 371,132; Delaware and Hudson Canal, 267,799; Pennsylvania Railroad, 189,578; Pennsylvania Coal Company, 105,592; New York, Lake Erie and Western Railroad, 30,800. The total tonnage for the three months of 1883, as compared with the corresponding period in 1882, shows an increase of 858,338 tons. The stock of coal on hand at tidewater shipping points on March 31, 1883, was 598,192 tons—an increase during the month of 22,427 tons.

The State of New York has purchased for the Sinking Fund $500,000 New York City 5 per cent stock and $500,000 District of Columbia 3-65s. The former will net to the State about 3½ per cent. per annum and the latter about 3¼ per cent, or a fraction more than would have been obtained by investing in United States 4 per cent bonds.

The directors of the North River Construction Company have now called the entire capital stock of $10,000,000, and give notice that there still remains $300,000 unpaid, and that unless the said amount is paid on or before May 21 the subscriptions will be forfeited.

The annual report of the Atchison, Topeka and Santa Fe Railroad shows the gross earnings for 1882 to be $14,733,000; expenditures, $8,637,000; net earnings, $6,136,000. The net increase over 1881 is $1,088,000.

The estimated earnings of the Gulf, Colorado and Santa Fe Railway for the month of March, 1883, was $141,104.37, mileage 482; March, 1882, $78,985.02, mileage 373—increase, $62,119.35; increase in mileage 109. Estimated earnings for three months, ending March 31, 1883, $436,708.75. Estimated earnings for three months, ending March 31, 1882, $262,013.93—increase, $174,684.82.

The annual report of the Panama Railroad Company, which was presented at the meeting of the stockholders on the 9th inst., showed that the gross earnings of 1882 from all sources were $2,454,345.80, and the gross expenses $1,431,810.51, leaving

a net profit of $1,082,535.29. New locomotives, cars, etc., have been purchased at a cost of $19,734 97. The treasurer's statement shows that the assets of the company are $4,326,929.08, and the liabilities $813,941.32.

The latest recorded sales of stocks and bonds at the New York, Philadelphia, Boston and Baltimore Stock Exchanges are as follows:

NEW YORK.

Albany and Susquehanna, 130¼; do. 1st, 112; do. 2d, 103¼; Adams Express, 130; American Express, 91¾; American Cable, 66; Arkansas 7s, Central R. R. issue, 22; do, L. R., P. B. & N. O., 51; Allegheny Central, 20; Alabama, Class A, 83; Am. Dock and Imp. 5s, 88½.

Boston and New York Air Line pref., 80; Burlington, Cedar Rapids and Northern, 82; do. 1st, 101⅜; Buffalo, New York and Philadelphia 1st, 101¾; Buffalo, New York and Erie 7s, new, 120½.

Chicago and Alton, 135; do. S. F., 114½; do. 1st, 118½; Chicago, St. Louis and Pacific, 22; do. pref., 56; Canadian Pacific, 59¾; Chicago and Eastern Illinois 1st, 99; Canada Southern, 67⅝; do. 1st, guar., 98½; Central of New Jersey, 76¼; do. consol. ass., 113; do. conv. ass., 113; do. 1st, 1890, 116; do. adj., 107; do. inc., 87; Central Pacific, 76½; do. gold bonds, 114¼; do. San Joaq. Br., 108¼; do. Cal. & Or. Br., 103½; Chicago and Northwestern, 134¾; do. pref., 152; do. S. F. 5s, 100¼; do. consol. 7s, 131½; do. 1st mort., 105½; Chicago, Milwaukee and St. Paul, 102⅞; do. pref., 120; do. Chicago and Pacific Western div. 1st, 94½; do. Southern Minn. div. 1st, 107¾; do. H. & D. div. 1st, 119; do. La Crosse div. 1st, 120; do. 8s, 132; do. I. & M. div. 1st, 121½; Chicago, St. Paul, Minneapolis and Omaha, 49½; do. pref., 107; do. consol., 108¾; Cleveland and Toledo, S F., 106½; Chicago, Burlington and Quincy, 126¾; do. 7s, consol., 123; do. Denver div. 4s, 1922, 84¾; Cairo and Fulton 1st, 109¼; Columbus, Hocking Valley and Toledo, 1st, 84; Chicago, Rock Island and Pacific, 123½; do. 6s, 1917, 124½; Chicago, St. Louis and New Orleans 5s, 104⅝; Cleveland, Columbus, Cincinnati and Indianapolis, 75; do. consol,, 122; Columbus, Chicago and Indiana Central, 5¼; do. inc. reorganization certif., 74; Columbia and Greenville pref., 59½; Consolidation coal, 26; Colorado coal and iron, 37; do. 1st, 85; Chesapeake and Ohio, 21½; do. 1st pref., 32½; do. 2d pref., 24¾; do. 1st mort., Series A, 107⅞; do. B, 92¾; do. 6s, 1911, 106; do. currency 6s, 52¾; Cleveland and Pittsburgh, 134; do. 7s, consol. S. F., 126½; Central Iowa, 25; do. 1st, 108½; Cedar Falls and Minnesota, 15.

Delaware, Lackawanna and Western, 127¼; Delaware and Hudson Canal, 110¾; do. 1st, Penn. div., 125; do. 7s, 1894, 115; do. 1884, 103¾; Denver and Rio Grande, 48¾; do. 1st, 114; do. 1st consol., 97½; Dubuque and Sioux City, 85; Denver, South Park and Pacific 1st, 99.

East Tennessee, Virginia and Georgia, 10¼; do. pref., 21½: do. 5s, 75⅜; do. inc., 37¼; do. 1st, 117; Elizabethtown, Lexington and Big Sandy 6s, 94½; Evansville and Terre Haute 1st, 98⅝.

Fort Worth and Denver 1st, 72.

Galveston, Harrisburg and San Antonio 1st, 104; Green Bay, Winona and St, Paul, 9¼; do. 2d inc., 25; Great Western 2d, 102½; Georgia State 7s, gold, 115¼; Gulf, Colorado and Santa Fe 1st, 113¼.

Houston and Texas Central, 75⅛; do. 1st M. L., 109; do. Waco and N. W. div. 1st, 115; Hannibal and St. Joseph, 41¼: do. pref., 93; do. 8s, consol., 105; do. 6s, consol., 109; Houston, East and West Texas 1st, 101.

Indianapolis, Decatur and Springfield 1st, 100; Illinois Central, 146; Illinois Leased Line, 80½; Indiana, Bloomington and Western, 33⅛; do. 1st, 88; International and Gt. Northern 1st, 110¾; do. coupon 6s, 83.

Keokuk and Des Moines 1st, 103½; Kansas Pacific 1st consol., 101¾; do. 6s, 1896, 110; do. inc., 102¼.

Louisville, New Albany and Chicago, 54⅞; do. 1st, 101½; Lake Shore and Michigan Southern, 111⅝; do. div. bonds, 119; do. 1st. reg., 124; do. 2d consol., 121¼; Lake Erie and Western, 30½; do. inc., 40; do. consol. ass., 104; do. 1st, 100; Long Island, 67: do. consol. 5s, 95; Lehigh and Wilkesbarre 1st guar., 115¾; do. consol. ass., 104; Louisville and Nashville, 53¾; do. N. O. & Mobile div. 1st, 93½; do. Gen'l mort. 6s, 96; do. Nashville and Decatur 1st, 115; do. consol. 7s, 115½; Lafayette, Bloomington and Muncie 1st, 100; Louisiana consol., 64¾.

Metropolitan Elevated Railway, 81: do. 1st, 99½; do. 2d, 88; Manhattan Beach, 23⅜; Manhattan Railway, 41; do. 1st pref., 82; Memphis and Charleston, 44; Michigan Central, 94½; do. 7s, 125¾; Minneapolis and St. Louis, 28¾; do. pref., 60; do. Iowa Ext. 1st, 117; Missouri, Kansas and Texas, 31¼; do. consol. 7s, 108: do. 2d, 61¼; do. gen'l mort. 6s, 83½; Missouri Pacific, 104⅝; do. 1st consol., 107; do. 3d, 117½; Milwaukee, Lake Shore and Western, pref., 44½; do. 1st, 101; Mobile and Ohio, 17; do. 1st deben., 77; Morris and Essex, 125; do. 2d mort., 112¾; do. 1st consol., 124; do. 7s, 1871, 120½; Mutual Union Telegraph, 20½; do. 6s, 89; Maryland Coal, 15; Milwaukee and Northern 1st, 94; Michigan Southern S. F., 107¼.

New York Central and Hudson River, 125⅝; do. 6s, 1883, 106; do sub. 6s 102½; do. 6s, 1887, 107¾; do. 1st mort. coupon, 131; New York, Lake Erie, and Western, 37¾; do. new 2d consol., 98¼; do. new 2d 5s, funded, 97; do. 2d mort., 108; do. 7s, consol. gold, 127; do. 4th mort., 106½; New York and New England, 42½; New York, New Haven and Hartford, 178; New York City & Northern Gen'l mort., 47½; New York, Ontario & Western, 27¾; Norfolk & Western pref., 43¾; do. gen'l mort., 103½; Northern Pacific, 50⅜; do. pref., 87¼; do. 1st, 106; New Orleans Pacific 1st, 89: New York, Lackawanna and Western, 88¾; do. 1st, 116; New York and Harlem, 195; New York Elevated 1st, 117; Nashville, Chattanooga and St. Louis, 57; New York, Chicago and St. Louis, 12; do. pref., 29; do. 1st, 98¼; New Central Coal, 13¾; New Orleans and Pacific 1st, 89; North Missouri 1st, 120; New York, West Shore and Buffalo 1st, 78⅝.

Ohio and Mississippi, Springfield div. 1st, 118⅜; Oregon Improvement, 85⅛; do. 1st, 92; Ohio Central, 12¼; do. inc., 31⅛; do. 1st, 88½; Ohio Southern, 13; do. 1st, 84; Oregon Transcontinental, 83; do. 1st, 95½; Ohio and Mississippi, 35; do. 2d, 122½; do. consol. S. F., 117⅞; Oregon Railway and Navigation, 140; do. 1st, 107¼; Oregon Short Line, 25½; do. 6s, 99¼.

Peoria, Decatur and Evansville, 21½; Philadelphia and Reading, 55¾; Pullman Palace Car Co., 125½; Pacific Mail, 41¾; Pennsylvania Co. 4½s, 96½; Pittsburgh, Fort Wayne and Chicago, 135½; Pacific of Mo. 1st, 106.

Quicksilver, 8½; do. pref., 44¾.

Richmond and Danville, 63; do. deben., 67½; do. 1st, 96¼; Richmond, Danville and West Point, 34⅞; Rochester and Pittsburgh, 20¼; do. 1st, 106; do. inc., 46; Richmond and Alleghany, 13⅞; do. 1st, 79½; Rome, Watertown and Ogdensburg, 34; do. 5s, ext., 68½; do. inc., 43½; Rensselaer and Saratoga, 143½.

Syracuse, Binghamton and New York 1st, 123; St. Louis, Alton and Terre Haute, 70; do. pref., 102; do. 2d pref., 106; do. 1st mort., 113; do. inc., 106; St. Louis and San Francisco, 33; do. pref., 52¾; do. 1st pref., 95; do. 2d, Class B, 100; do. C, 99¾; do. gen'l mort., 99⅝; St. Paul and Duluth, 38; do. pref., 96½; St. Paul, Minneapolis and Manitoba, 123¾; do. 1st, 109; do. 2d, 110; do. Dakota Ext. 1st, 111½; South Carolina, 27½; do. 1st, 104¾; do. 2d, 94½; do. inc., 66; South Pacific of Mo. 1st, 104½; St. Louis and Iron Mt. 1st, 115; do. 2d, 111; do. 5s, 78; do. Cairo, Ark. and Texas 1st, 109½; do. Arkansas Br. 1st, 110⅞; Southern Pacific of Cal. 1st, 103⅜; St. Paul and Sioux City 1st, 110¼; St. Louis, Kansas City and Northern, Omaha div. 1st, 110.

Tennessee 6s, old, 42; do. compromise bonds, 46⅛; Texas and Pacific, 40½; do. income L. G., 65; do. consol. 6s, 95¾; do. Rio Grande div. 1st, 83¾; Texas Central S. F. 7s, 108; Toledo and Wabash 1st, 108; do. 2d, 102½; do. St. Louis div. 1st, 102⅜; do. consol., 97⅛; Toledo, Peoria and Western 1st, 107.

United States 4½s, 1891, coupon, 113¼; United States 4s, 1907, coupon, 119⅝; do. 3s, reg., 103¾; Union Pacific, 97¾; do. 1st, 114¾; do. S. F. 8s, 116¾; do. L. G., 107½; United States Express, 60.

Virginia Midland, 31½; do. inc., 61½.

Wabash, St. Louis and Pacific, 29½; do. pref., 48; do gen'l mort. 6s, 82; do. Havana div. 1st, 87; Western Union Telegraph, 82½; do. 7s, 1900, 114¾; Wells Fargo Express, 124½; Western Pacific bonds, 111; Winona and St. Peter 2d, 123.

BOSTON.

Atlantic and Pacific blocks, 107½; do. 6s, 95½; do. inc., 24½; Atchison, Topeka and Santa Fe, 83¾; do. plain 5s, 84; do. 7s, 119¼; do. L. G. 7s, 112; do. 6s, 97½; Atchison R. R. guar., 112; do. 4½s, 84.

Boston and Maine, 166; Boston Water Power Co., 4¼; Boston Land Co., 6¾; Boston and Albany, 178¼; Boston, Hartford and Erie 7s, 45½; Boston and Lowell, 90; Boston and Providence, 165½; Burlington and Missouri River in Nebraska 6s, non-exempt, 102½; do. exempt, 113½, do. L. G. 7s, 116½.

Chicago, Milwaukee and St. Paul, Dubuque div. 6s, 102¾; Connotton Valley, 2¼; do. pref., 3¼; do. 5s, 22½; do. 6s, 20; Central of Iowa, 26; Calumet and Hecla Mining Co., 233; Chicago and West Michigan, 56; Chicago, Burlington and Quincy, 126½; do. 7s, 125⅛; do. 4s, old, 86⅜; do. 5s, 102; do. Denver Ext. 4s, 83½; do. S. W. div. 4s, 79; Cedar Rapids and Missouri River, 105½; do. 7s, 121; Connecticut and Passumpsic Rivers R. R., 88; Cincinnati, Sandusky and Cleveland, 24; do. 7s, 102½; Cheshire pref., 59.

Detroit, Lansing and Northern, 80; do. pref., 112; do. 7s, 118.

Eastern, 45½; do. 6s, 112½;

Flint and Pere Marquette, 25¼; do. pref., 99½; Franklin Mining Co., 10½; Fitchburg, 124½.

Iowa Falls and Sioux City, 85; do. 7s, 119⅜.

Jackson, Lansing and Saginaw 8s, green, 113.

Kansas City, Lawrence and Southern 6s, 104½; Kansas City, St. Joseph and Council Bluffs 7s, 111; Kansas City, Fort Scott and Gulf pref., 118; do. 7s, 111; Kansas City, Springfield and Memphis blocks, 99¾.

Louisiana and Missouri River, 16½: do. pref., 35; Little Rock and Fort Smith, 32⅞; do. 7s, 92.

Mexican Central, 19¾; do. 7s, 73½; do. inc., 21¾; do. block No. 4, 98; Marquette, Houghton and Ontonagon, 51¼; do. pref., 111; Massachusetts Central 6s, 24½; Metropolitan Horse R. R., 68½; Maine Central, 93.

Northern R. R., 112; New York and New England, 41¾: do. 7s, 114¾; do. 6s, 106¼; New Mexico and Southern Pacific 7s, 113¼; Nashua and Rochester, 54; Norwich and Worcester, 158.

Old Colony, 138; do. 6s, 117; Osceola Mining Co., 23; Oregon Short Line 6s, 99¼.

Pullman Palace Car, 125; Portland, Saco and Portsmouth, 107; Pueblo and Arkansas Valley 7s, 113; Philadelphia, Wilmington and Baltimore, 63.

Quincy Mining, 45¼.

Republican Valley 6s, 102; Rutland, 3½; do. pref., 20; do. 5s, 64; do. 6s, 95½.

Sonora 7s, 103½.

Toledo, Cincinnati and St. Louis, 4; do. 6s, 47; Toledo, Delphos and Burlington M. L. inc., 12¾; do. Branch inc., 12.

Vermont and Massachusetts, 131.

Wisconsin Central, 23¾; do. pref., 30½; do. 7s, 2d Series, 52; Worcester and Nashua, 57.

PHILADELPHIA.

Allegheny Valley Income 7s, 44¾; do. Scrip, 43; do. 7-30s, 123; American Steamship Co. 6s, 105.

Buffalo, New York and Philadelphia, 16½; do. pref., 30¼; Belvidere Delaware 2d, 103¼.

Camden and Amboy mort. 6s, 1889, 112; Central Transp., 35¼; Connecting R. R. 6s, 118; Catawissa, 22½; do. 1st pref., 59; do. 2d pref., 57.

Delaware Division Canal, 43¼; Delaware and Bound Brook 7s, 124¾.

Erie and Western Transp. Co., 50¼; East Pennsylvania, 51.

Huntingdon and Broad Top Mt., 15; do. pref., 29½; do. consol. 5s, 86½; Harrisburg City 6s, 102.

Junction 2d Mort. 6s, 115.

Little Schuylkill, 60¼; Lehigh Valley R. R., 66; do. 1st mort. 6s, 122; do. 7s, 134; do. consol. mort. 6s, 124; Lehigh Coal and Navigation, 42¾; do. 6s, gold loan, 113; do. 6s, 1884, 102; do. consol. 7s, 118½.

Minehill and Schuylkill Haven, 64

Northern Central, 56¾; do. 5s, series A, 99½; do. B, 95¼; do. 6s, 1885, 104; North Pennsylvania, 68¾; Norfolk and Western pref., 42¾; Nesquehoning Valley, 53¼.

Philadelphia and Erie, 20¾; do. 5s, 103¼; do. 7s, 112½; Philadelphia and Reading, 27¾; do. gen'l mort. 6s, 96¾; do. scrip. 115; do. consol. mort. 7s, coupon, 125; do. adjustment scrip, 86¾; do. consol. 5s, 1st series, 79½; do. 2d series, 64; do. debenture 6s, 70; do. gen'l mort. 7s, 103; do. conv. 7s, Jan., 1885 coupon, 58; Philadelphia and Reading Coal and Iron deben. 7s, 70; Pennsylvania R. R. 64¾; do. consol. 6s, reg., 120; do. gen'l mort. 6s, 118; People's Passenger R. R., 10; Pittsburg, Titusville and Buffalo, 7s, 98; Philadelphia City 4s, 1894-'97, 107½; do. 1884, 102½; do. 6s, new untaxed, 1901, 113; do. 1890, 119; Philadelphia, Wilmington and Baltimore 4s, 94; Pennsylvania State 5s, 118; do. 4s, 1912, 117¼; Pennsylvania Co. 6s, 107; do. 4½s, 96; Pennsylvania Car Trust 5s, 100¼; Philadelphia, Germantown and Norristown R. R., 108; Philadelphia and Gray's Ferry Passenger R. R., 45; Pittsburgh City Compromise 5s, 110; do. Avenue 7s, 1885, 104¾; Philadelphia City Passenger Railway, 88½; Pennsylvania and New York Canal 7s, 1907, 125; Pittsburg, Cincinnati and St. Louis 7s, 121.

Schuylkill Nav., 7¾; do. pref., 16; do. 6s, 1907, 91; do. 6s, 1897, 107; Sunbury and Lewistown 7s, 112; Susquehanna Canal 6s, 64¾; St. Paul and Duluth, 36¼; do. pref. 97; Stenbenville and Indiana 6s, J. & J., 102; do. A. & O. 100¾;

Union Passenger Railway, 115; United Companies of New Jersey, 189¼; Union and Titusville 7s, 98.

West Jersey and Atlantic, 38; do. 1st, 108; West Chester and Philadelphia 7s, 114½; West Jersey R. R., 50; do. 1st mort. 6s, 116.

BALTIMORE.

Atlanta and Charlotte Air-line, 67½; do. 1st, 108.

Baltimore and Ohio, 205; do. 1st pref., 130; do. 2d pref., 127; do. 6s, 1885, 103½; Baltimore City 6s, 1890, 113½; do. 6s, 1902, 126; do. 6s, 1886, 107¼; do. 6s, 1893, exempt, 116½; do. 5s, 1894, 113; do. 5s, 1885, 100¾; do. 5s, 1916, 122½; do. 4s, 1925, 111.

Columbia and Greenville 1st, 104½; do. 2d, 80½; Charlotte, Columbia and Augusta, 37; do. 2d, 99¾; Central Ohio, 50; do. pref., 53; do. 1st, 109; Cincinnati City 7.3os, J. & J., 132; Canton Land Co., 53; do. 6s, 110.

George's Creek Coal, 93.

Maryland State Defense 6s, 102¾; do. 5s, 1890, 103; Marietta and Cincinnati 1st, 131¾; do. 2d, 105¼; do. 3d, 53¾.

Northern Central, 56¼; do. 6s, 1904, gold, 115; do. 6s, 1900, 114½; do. 6s, 1900, gold, 115½; do. 5s, series A, 100; do. B, 95½; North Carolina State consol. 4s, 78.

Ohio and Mississippi, Springfield div. 1st, 120.

Pittsburgh and Connelsville 7s, 122.

Richmond and Alleghany, 14¾; Richmond and Danville 6s, gold, 105½.

South Side (Va.) R. R. 2d, 102.

Union Railroad 6s, 118.

Virginia and Tennessee 6s, 101½; Virginia Consols, 37; do. consol. coupons, 48; do. do. old, 54¾; Virginia new 3s, 53¼; Virginia Peelers, 37½; do. coupons, 43; Virginia 10-40s, 33½; do. 10-40 coupons 48; do. old, 55; Virginia Midland 1st mort., 111; do. 2d mort., 107½; do. 5th mort., 95; do. inc., 59½.

Wilmington and Weldon, 121½; Wilmington Columbia and Augusta, 110¾; Western Maryland, 14.

THE LAKE SHORE AND MICHIGAN SOUTHERN RAILWAY COMPANY.

TREASURER'S OFFICE,
GRAND CENTRAL DEPOT,
NEW YORK, March 27, 1883.

THE BOARD OF DIRECTORS of this company have this day declared a QUARTERLY dividend of TWO PER CENT upon its capital stock, payable on TUESDAY, THE FIRST DAY OF MAY NEXT, at this office.

For the purpose of this dividend, and also for the annual meeting of the stockholders for the election of directors, etc., which is to be held on the 2d day of May next, the transfer books will be closed at 3 o'clock P. M on Friday, the 30th inst., and will be reopened on the morning of Friday, the 4th day of May next.

F. W. VANDERBILT,
Acting Treasurer.

NEW INVENTIONS.

TO INVENTORS AND PATENTEES.

THIS department is devoted to the notice, consideration and description of new and valuable inventions applicable to Railroads, Steam Navigation, Machinery, Manufactures, Mining and Tramways. New patents of this description appearing in the weekly Official Gazette of the Patent Office are duly noticed in our columns, and full descriptions of those most useful and important are published *free of charge*.

☞ Inventors, Patentees, and the holders of Patents are requested to forward us their claims and specifications, with description of their inventions for our examination with a view to their publication in this department. Descriptive cuts, diagrams, and illustrations of the same are also desired.

☞ In selecting inventions for full description in this department, the editor will be guided solely by their importance and value, and their interest to the readers of the AMERICAN RAILROAD JOURNAL.

List of Patents for Inventions Relating to Railways, Tramways, Machinery, Etc.

BEARING DATE OF MARCH 27, 1883.

274,458. Stock-Car: George D. Burton and Joel M. Holden, Boston, Mass. Filed Nov. 6, 1882.

274,463. Car-Starter: Arra F. Clark, Boston, Mass. Filed Sept. 16, 1882.

274,480. Rotary-Engine Locomotive: Isaac Newton Forbes, Lawrence County, Dak. Filed July 26, 1882.

274,482. Furnace for Locomotive and other Boilers: John A. Gano, Cincinnati, Ohio. Filed Aug. 11, 1882.

274,505. Underground Cable-Way: Almerin H. Lighthall, San Francisco, Cal. Filed Nov. 18, 1882.

274,511. Car-Coupling: Phineas E. Merihew, Fairhaven, Mass. Filed Jan. 30, 1883.

274,512. Regulating-Valve: Patrick O'Reilly, New York, N. Y. Filed Aug. 14, 1882.

274,530. Cut-Off Valve for Steam-Engines: John M. Sweeney, Wheeling, W. Va. Filed Nov. 21, 1882.

274,553. Governor for Steam-Engines: Mathias I. Beaudreau, Fond du Lac, Wis. Filed Aug. 18, 1882.

274,559. Cut-Off Mechanism for Steam-Engines: Nathan F. Burnham, York, Pa. Filed Jan. 25, 1883.

274,561. Feed-Water Heater: George Cassady, Flint, Mich. Filed Nov. 14, 1882.

274,565. Planing-Machine: Allen P. Creque, New York, N. Y. Filed Aug. 24, 1882.

274,569. Car-Coupling: Clarence B. Cutler, Schodiack, N. Y. Filed Dec. 4, 1882.

274,571. Slide-Valve for Compound Engines: Edward G. Davis, St. Louis, Mo. Filed Jan. 22, 1883.

274,585. Stock-Car: Montrose H. Gilbert, Smithville, Ohio. Filed Oct. 17, 1882.

274,593. Rail-Joint: Charles F. Hartman, Keller's Church, Pa. Filed June 28, 1882.

274,609. Rail-Lifter: Frank Jackson and Edward B. Austin, Manchester, County of Lancaster, assignors to William Righter Comings, London, England. Filed Jan. 22, 1883. Patented in England Oct. 28, 1880, No. 4,399.

274,621. Ticket-Holder for Car-Seats: Crowell S. Macann, Rahway, assignor of one-half to Alexander Cook, Newark, N. J. Filed May 12, 1882.

274,625. Governor: William B. Mason, Boston, assignor of one-half to William A. Perry, Brookline, Mass. Filed Jan. 11, 1883.

274,635. Railway Safety-Alarm: William B. Morris, San Francisco, Cal. Filed Oct. 30, 1882.

274,643. Railway-Switch: Jos. Murphy, San Jose, Cal. Filed Feb. 18, 1882.

274,645. Car-Coupling: Carl F. A. Neitzel, Concordia, Kans. Filed July 31, 1882.

274,647. Steam-Actuated Valve: John P. Northey, Toronto, Ontario, Canada. Filed Dec. 28, 1882.

274,659. Tool for Cutting Slots in Rails: James K. Polk, Renfroe, Prentiss, Ga, Filed Dec. 5, 1882.

274,669. Rotary Engine: John L. Starks, Sharon Grove, Ky. Filed Jan. 29, 1883.

274,689. Sleeping-Car: William H. Wigmore, Philadelphia, Pa., assignor of one-half to John H. Doerr, same place. Filed July 19 1882.

274,713. Railroad-Switch Adjusting and Locking Device: Reese G. Brooks, Scranton, Pa. Filed Jan. 9, 1883.

274,738. Car-Brake: James M. De Witt, Greeley, Colo., assignor to himself, James W. McCreery, and Samuel F. McCreery, all of same place. Filed Dec. 30, 1882.

274,749. Car-Coupling: Samuel J. Filson, Maysville, Ky. Filed Feb. 28, 1883.
274,753. Car-Heater: Willard M. Fuller, New York, N. Y., assignor to Cyrus Pyle, Brooklyn, N. Y., and Daniel Eldridge, New Brunswick, N. J. Filed Dec. 1, 1882.
274,755. Lubricating Journal-Bearings: James Garland and James Kenyon, Lynchburg, Va. Filed Jan. 22, 1883.
274,756. Boiler-Flue Scraper: William Alfred Gay, Buffalo, N. Y., assignor of one-half to John Otto, same place. Filed Jan. 10, 1883.
274,764. Car-Coupling: Thomas Harding, Lafayette, Ind. Filed Jan. 23, 1883.
274,767. Automatic Car-Brake: Gustavos Heidel, St. Louis, Mo. Filed Jan. 22, 1883.
274,786. Cinder-Car: William Kelly, Scottdale, Pa. Filed Dec. 19, 1882.
274,787. Safety-Valve: Alden D. Kilborn, Tucson, Ariz. Filed Jan. 15, 1883.
274,794. Shaft-Hanger: Walter J. F. Liddell, Charlotte, N. C. Filed Feb. 10, 1883.
274,796. Shaft-Coupling: August Loehner, St. Louis, Mo., assignor to Loehner & Wolff, same place. Filed Mar. 29, 1881.
274,805. Railway-Car: Edward B. Meatyard, Geneva, Wis. Filed July 7, 1882.
274,808. Car-Coupling: Jacob D. Miller, York, Pa. Filed Oct. 5, 1882.
274,810. Valve-Gear for Steam-Engines: Alexander Morton, Glasgow, County of Lanark, Scotland. Filed Sept. 20, 1882. Patented in England March 28, 1882, No. 1,490.
274,814. Railroad-Switch: Simeon Nichols, Lisbon, Me, assignor of one-fourth to Charles W. Parker, Chicago, Ill. Filed Nov. 1, 1882.
274,815. Oil-Can: George C. Oram, Brooklyn, N. Y., assignor to himself and William H. Daly, Bergen Point, N. J. Filed Sept. 11, 1882.
274,824. Sectional Steam-Generator: David Renshaw, Boston, Mass. Filed Oct. 14, 1882.
274,825. Sectional Boiler: David Renshaw, Boston, Mass. Filed Oct. 12, 1882.
274,834. Lifting Mechanism: George A. Shoudy, Rockford, Ill. Filed Sept. 15, 1882.
274,847. Car-Coupling: Robert G. Thompson, White Cottage, Ohio. Filed Feb. 13, 1882.
274,854. Steam-Boiler Furnace: Bernard Topmiller, Cincinnati, Ohio, assignor of one-half to Simon Obermayer and Jacob Heinzheimer, same place. Filed June 23, 1882.
274,856. Rolling-Mill: Richard Uren, Houghton, Mich. Filed Dec. 8, 1882.
274,867. Spark-Arrester: Anthony Waterman and Frederick L. Waterman, Boston, Mass. Filed Nov. 1, 1882.
274,869. Car-Brake: Simon P. Weller, Silvanus Wanee, and George Roesch, Denver, Colo., assignors of one-fourth to August Rische and Carl A. Funke. Filed Jan. 5, 1883.
274,889. Manufacture of Iron and Steel: James Henderson, Bellefonte, Pa. Filed Sept. 27, 1882. Patented in England Nov. 8, 1870, No. 2,940.
274,890. Dumping-Car: Callax La Cosse, West Bay City, Mich. Filed Dec. 2, 1882.

BEARING DATE OF APRIL 3, 1883.

274,893. Car-Coupling: Arthur H. Armstrong, Plainville, Conn. Filed Jan. 4, 1883.
274,896. Car-brake shoe: Herbert A. Banning, New York, N. Y. Filed Feb. 12, 1883.
274,908. Car-Coupling: B. W. Cloak, Dayton, Ohio, assignor of one-half to John Cloak, same place. Filed Nov. 20, 1882.
274,927. Station-Indicator: Samuel Forrester, Alleghany, Pa. Filed Oct. 30, 1882.
274,968. Injector: David Renshaw, Braintree, Mass. Filed Jan. 20, 1883.
274,991. Stock-Car: Stephen P. Tolman, Dunellen, N. Y. Filed Dec. 13, 1882.
274,994. Gage-Cock: Donald F. Tousey, Minneapolis, Minn., assignor of one-half to John F. Canney, same place. Filed Aug. 8, 1882.
275,001. Nut-Lock: Theophilus Weaver, Harrisburg, Pa. Filed Dec. 5, 1882.
275,019. Pneumatic Railway-Signal: Edward Mason Chase, Boston, Mass. assignor to Ellis L. Motte, same place, and Horatio N. Glover, Milton, Mass. Trustees. Filed Mar. 27, 1882.
275,028. Railroad-Crossing: Edward Evans, Mansfield, Ohio. Filed Oct. 23, 1882.
275,038. Railroad-Switch: Josiah Gray and Wesley Hollenback, Chicago, Ill., assignors to themselves, Connell B. Shefler, and Jacob R. Reed, all of same place. Filed Aug. 4, 1882.
275,039. Device for Depositing Torpedoes in Snow-Banks: George A. Gunther, Brooklyn, N. Y. Filed Jan. 4, 1883.
275,091. Safety Attachment for Boilers: Daniel Sullivan, Lincoln, R. I. Filed May 9, 1882.
275,096. Railway Track-Layer: John Turner, Grosse Isle, Mich. Filed Oct. 25, 1882.
275,115. Railroad-Switch: Abraham Ayers, New York, N. Y. Filed Dec. 15, 1882.
275,138. Car-Coupling: Newton Campbell, Elizabethtown, Ohio. Filed Jan. 17, 1883.
275,150. Car-Coupling: Daniel W. Coburn, Buffalo, Tex. Filed Feb. 21, 1883.
275,164. Curtain-Bracket for Sleeping-Cars: John H. Doerr, Camden, N. J., and William H. Wigmore, Philadelphia, Pa. Filed July 27, 1881.
275,175. Gage-Cock and Low-Water Detector: George L. Engelking, Pittsburg, Pa., assignor, by direct and mesne assignments, to William Starkey and George E. Williams, both of same place. Filed Jan. 27, 1883.
275,117. Car-Coupling: Emil C. Eyl, Jefferson City, Mont. Filed Aug. 31, 1882
275,180. Electrical-Connector for Railway-Track Circuits: Stephen D. Field, New York, N. Y. Filed Jan. 16, 1882.
275,184. Valve: Henry R. Frisbie, Bridgeport, Conn. Filed Dec. 29, 1882.
275,188. Nut-Lock: Franklin Getz, Tonawanda, N. Y. Filed Feb. 6, 1883.
275,211. Car-Starter: Lewis W. Hewett, New York, N. Y., and Sumner J. Leonard, Williamsport, Pa., assignors to Philip B. Shaw, Williamsport, Pa. Filed May 2, 1882.
275,221. Stock-Car: Elias Kohler, York, Pa. Filed Nov. 9, 1882.
275,255. Electric Railway-Signal: Henry C. Nicholson, Mount Washington, Ohio. Filed Jan. 31, 1883.
275,256. Bar for Aligning Railway-Rails: Burnett J. Noonan, Fern Ridge, Mo. Filed Jan. 9, 1883.
276,301. Snow-Plow: Henry A. Webber, Rockton, Ill. Filed Dec. 2, 1882.
275,306. Car-Coupling: Benjamin F. Whitney, Eldon, Iowa. Filed Feb. 1, 1883.
275,313. Railroad Crossing and Station Signal: Wm. B. Wood, Bowling-Green, assignor of one-half to Lewis C. Garrigus, Russellville, Ky. Filed Oct. 7, 1882.
275,323. Car-Axle: Marcellus O. Baldwin, Kansas City, Mo., assignor of one-half to H. A. Dorr, same place. Filed Dec. 4, 1882.
275,324. Car-Axle: George W. Bedbury, Portland, Oreg,. assignor of one-third to E. J. Haight and L. M. Cox, both of same place. Filed Dec. 9, 1882.

Parkhill's Watch Tower and Signal Lantern.

THE inventor of the new and ingeniously devised watch tower and signal lantern best designated by his name, is MR. CLAIR S. PARKHILL, of Hornellsville, N. Y., who has secured letters patent for the protection of his rights therein.

His invention relates to new and useful improvements in watch towers and signal lanterns, to prevent accidents at railroad crossings and other dangerous places, and consists in novel features of construction, combination and arrangement of parts.

The lantern or turret in Mr. Parkhill's invention stands on the top of the tower, and is supported and turned around by means of a pivot which extends through the ceiling of the watchman's coop. A lever is firmly secured to the lantern, which may be supported by four rollers run on a track on the floor. The sheet-iron frame of the lantern rests on arms which are bent to allow the turret or lantern to revolve sufficiently far to present or expose at will either the word "Danger" or "Safety" without the possibility of the arms hitting a gas-pipe which passes from the coop below to the turret above.

The watchman's coop is reached by means of a ladder, through a trap-door raised and held open by means of a spring, and which, after the watchman has entered his coop, is closed and fastened in a position even with the floor, so that it can be walked upon. A trap-door in the ceiling of the watchman's coop opens downward and gives access to the turret. Inside the coop, directly overhead, is a lever—whose use will be explained presently—held at proper places by means of a spring bolt which catches into notches. Windows enable the watchman to see in every direction. Arrangements for his comfort are easily made by a small furnace in the compartments below the coop or by means of a gas-stove within it.

Outside of the coop is a large gong, which is sounded whenever the turret is moved in any direction by means of the lever spoken of above as being inside the watchman's coop, directly overhead, and held at proper places by means of a spring bolt. Should the watchman need to sound the gong while the turret is stationary, he could do this by means of a crank inside the coop. Every emergency is thus provided for.

The room containing the ladder for the ascent of the watchman to his coop can be used for storing coal, flags and other things, and as a place of rest and shelter for switchmen. Of course, when the existence of this room would be needless and an impediment, the watchman's coop and the turret or lantern

above could be supported on iron columns made of sufficient height to enable the watchman to command an unobstructed view of trains coming from either direction.

We scarcely need add that an arm, beam, or any instrument to act as a gate across the street or sidewalk could be connected with the turret and lever working the gong, or either of them, and worked so as to be opened and closed, or raised and lowered by the watchman in the tower independently or with the turning of the turret and sounding of the gong.

The intention, simplicity and effectiveness of Mr. Parkhill's invention commend it to the attention of persons interested in the improvement of railroad construction.

Stewart's Switch and Signal Mechanism for Railways.

This device, patented recently, would be more exactly described as an arrangement of levers for the more perfect working of long distance signals, and also for combining these with switches. The signal (semaphore preferred) has a weighted lever, the weighted end attached and connected to the short end of the danger arm by a rod. The wire or cable pull is then attached to the other end of the weighted lever, is run around pulley in a frame below the lever and away to the operating lever, the distance required, where the chain-section of the pull passes around a pulley fastened at the lower end of the quadrant by a pin which serves for a fulcrum. The end of the chain section is supplied with a weight which keeps the pull tight always; if it expands the weight lowers, and if it contracts the weight rises, thus keeping the pull under constant tension. The weight of the lever end being heavier than the weight of the lever at the semaphore, the weighted end of said lever is kept raised and the signal arm at "safety" position. The invention comprises besides, on the same fulcrum, a pin with pulley, at the operating end of pull, and a lever adapted to grip the chain section. The excess weight being raised, the weighted end of the lever at the semaphore drops, and the "danger" arm is raised to the "danger" position. On reversing the operating lever it releases the pull and leaves it free for contraction or expansion, as before described.

Wm. C. Stewart, the inventor of the system briefly described, resides at Camden, N. J. He has prepared models of his invention for the coming Exposition of Railway Appliances to be held at Chicago. His ingenious mechanism was suggested by his observation of the trouble occasioned signal erectors by the expansion and contraction of the wire pulls of long distance semaphore signals, expansion causing the signal to not rise the proper height, an inconvenience temporarily regulated by means of screw buckles. The first cool spell would, in turn, contract the wire, and the consequence was it would break. To obviate these annoyances, Mr. Stewart invented his system of switch and signal mechanism, which, he claims, answers its purpose fully. By its means he can work one semaphore signal from twelve different switch levers, without these conflicting with each other, thus doing away with the signal levers, sliding plates and such appliances. By means of his invention Mr. Stewart claims that he can work twelve semaphores from one switch lever, with no more manual labor than working the switch alone; and also make any desired combination. These advantages, he believes, make his the most perfect interlocking switch and signal system that can be worked, especially in cases where distance signals are used. Practical railroad men acquainted with it, uniformly commend it as thoroughly adapted to its purposes.

We may add in the way of anticipation, that Mr. Stewart's model, before spoken of as for the Chicago Exposition, has the clutch or gripping and releasing levers short, and attached to the switch lever. For junction switch the two main line signals run over one pulley with release clutch attached to the two junction signals. Over another pulley is the same, except the one clutch to pull and the other to break off and release. While raising the excess weight of one pair the excess weight of the other pair of signals is pulling against the switch lever and thus forms a counter-balance of the signals, or, as it were, a scale beam, there being no more work to operate the switch and signals than operates the switch alone. As the track is set, so sets the signals, and it is impossible to work them otherwise.

Automatic Speed Indicator and Guard Lamp for Cars and Vessels.

The great need of a train lamp which could be easily and quickly distinguished from "yard" and "switch" lights, hand lamps, etc., has long been felt by engineers and train men.

To supply this want and at the same time provide an accurate and simple speed indicator, a device has been invented which may be attached to the engine or any car, by which the lamp front is closed at regular intervals and instantly opened again, thus causing a series of flashes of light. The front of the lamp is provided with a moveable frame having two panes of colored glass, one above the other, say green and red. When the train moves forward green is automatically presented before the light, but as soon as motion is reversed, green drops and red is presented. The entire device is automatic, depending on no person for adjustment, and so arranged that if any accident should happen it will always assume the normal position of danger, "red."

The construction is as follows: To an axle of the car or engine are attached a gear-wheel and an eccentric. A jointed rod extends from the eccentric to the interior of the lamp and has at its upper end an adjustable paul. The front of the lamp is closed by means of a number of slats hung on pinions hung out of center and provided with weights to open them automatically. The adjustable paul acts on a ratchet-wheel, causing it to revolve one cog forward at each revolution of the car wheel; once in each revolution this cog wheel closes the slats and instantly releases them, thus causing a flash of light. By proportioning the number of cogs to the size of car wheel, a given number of flashes per minute will indicate a certain speed per hour, say thirty flashes per minute indicating thirty miles per hour; fifteen flashes per minute, fifteen miles per hour, etc. A rod having an adjustable cog at its lower end connects with the gear wheel; the upper end is fastened to the lamp frame having the colored panes of glass. When the train moves forward the frame is raised by the cog wheel and locks in that position; as soon as motion reverses, the adjustable cog is acted on in a reverse direction and the frame is unlocked and falls.

The usefulness of the device for river vessels and ferryboats at night must be apparent to all. For further information, address O. C. Knife, Norristown, Montgomery Co., Pa.

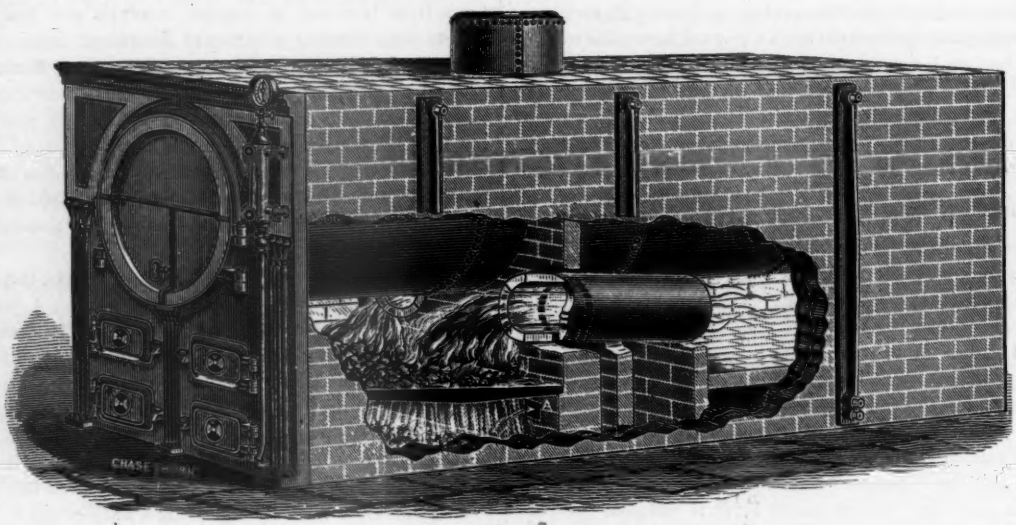
Railroad Crossing Gate.

The gate for which the U. S. Patent Office issued patent to J. O. McCutchan, of Middlebrook, Va., dated Dec. 12, 1882, No. 269,084, may be considered an automatic, revolving gate. It consists of a horizontal square bar, or shaft, to which are attached vertical pickets which sustain sufficient strands of barbed wire so interlaced as to make a continuous barrier to the passage of stock through cuts or from field to field. The barbs on the wire are protected by guards of plate broader at base and perforated for the passage of the wire, or by double rods, joined elliptically, attached to the middle of the shaft. These guards also receive the shock of contact with engine or rear of train. The shaft is sufficiently weighted at the ends to counterbalance the gate when opened or thrown down by the passing train, thereby restoring it to its normal position. A three-quarter inch rod so bent that the two rear ends are inserted in loops above the pilot on the engine, with about two feet of the double

and front end protected with first a gum tube and then an iron tube over it, which, by striking the gate near the top against the guards is found to be sufficient to open the gate, and prevent any inclination to crash that striking low down with the pilot would have without it. The shaft is journalled where it passes under the rails, and the journals rest in boxes with open tops, and sides as high as the top of the journalled parts of the shaft, which allows the weight of the passing train to rest on the shaft and bind it so as to prevent it from raising. These boxes, with gate, can be adjusted to any cross-tie by sinking it in ballast the depth of the shaft and box, which should be about three inches.

Perfect Combustion and Prevention of Smoke.

The Ritchie Furnace Company, of Chicago, have devised a furnace for steam boilers by which perfect combustion of fuel is obtained, and the formation of smoke prevented. It is a well-established fact that in ordinary furnaces the supply of oxygen derived from the atmosphere is not sufficient to insure the ignition of all the gases generated in the furnace chamber, and many of these volatile gases are "carried" off in a volume of smoke. To overcome this waste of inflammable material, the Ritchie Company furnish a device by which an additional supply of oxygen is brought in contact with the gases, causing their immediate combustion, and thereby preventing the formation of smoke. We furnish an illustration of the appliance with description of its construction and operation.



THE RITCHIE FURNACE.

By reference to the cut it will be seen that the furnace is applicable to all ordinary tubular boilers, and consists in building the bridge-wall up to the boiler. This bridge-wall contains an air chamber, into which air is introduced through openings located beneath the grate bars. The air is then admitted into the annular combustion chambers (extending horizontally through the bridge-wall and constructed of fire clay tile) by means of a number of perforations, which produce the required diffusive action and the intimate mixture of the oxygen with the unconsumed gases, causing a perfect and complete combustion at a high temperature.

The important feature of this furnace is that the greatest intensity of heat, caused by the perfect combustion of the gases, is located within the annular combustion chamber, and has no direct contact with the boiler; and the action of the furnace diffuses the heat at a high temperature *equally*, and no furnace of this kind can cause the shell of the boiler to burn, blister or bag, by concentrating the intense heat directly to the shell of the boiler over the fire-box, or bridge-wall, as is the case with many other devices for a similar purpose.

Raddin's Elastic Railway Chair.

Full information as to this improvement is given by Mr. John Raddin, of Lynn, Mass., to those who write for it. The following description of his chair cannot fail to be interesting to railroad men.

Its name indicates the leading peculiarity of the invention, namely, an elastic cushion, A, as in the cut, securely inclosed in the chair-bed by a covering plate, B, and bolted thereto to prevent the horizontal play of the cushion and keep out the air and dust.

RADDIN'S ELASTIC RAILWAY CHAIR.

The advantages of this construction are stated to consist in its preventing the hammering by the wheels absorbing the sound, and the displacement of the roadbed, thus giving an equal bearing on each sleeper and making the rail continuous; the rubber packing is believed to cause the rail to wear five times as long, as iron cannot be pounded with rubber under it, and the chairs and rails are firmly secured to the sleepers by the spikes, so that they are less liable to work loose on account of their elasticity; and the sleepers will wear twice as long, as the cushions receive the shock and prevent the grinding of the rails into the sleepers, thus keeping them from rolling and the spikes from working loose.

Chairs of this construction are obviously well adapted for elevated railroads and bridges. If screwed or spiked on every sleeper, they will absorb the jar, deaden the sound, and render the motion of the car noiseless.

The Pennsylvania Railroad Company have been so well satisfied with the working of the signal system of the American Electric Railway Signal Company as applied on the Tyrone division of their road, that they have issued orders to run all trains on that division by that system.

It is stated that the charge for third-class passengers per mile on the railways of India has been reduced to about one-half cent. The result has been a large increase in traffic, the poorer classes availing themselves more generally of the railways.

TRAMWAY DEPARTMENT.

[This department of the AMERICAN RAILROAD JOURNAL is devoted to the interests of Street Railways; and communications, suggestions and items of information relative to their organization, management and appliances are solicited by the editors. All communications should be accompanied by the name and address of the writer. The English nomenclature of "Tramway" is adopted in this department as being of greater convenience and more specific in its meaning than "street railway," though in allusion to individual organizations we shall preserve their corporate titles. It is our hope to nationalize the term Tramway, which is now generally used in every English speaking territory with the exception of the United States.]

THIS journal is the only one in the United States giving special attention, in a standing department, to the street-car interests. That hundreds of millions of dollars are invested in the means of street travel, and that every city of any size is provided with these means, are good reasons why, the vast and extensive character of the interest being considered, trustworthy information respecting it should be regularly printed and distributed. The management of the AMERICAN RAILROAD JOURNAL, taking precisely this view of the matter, began some months ago, and purpose to continue, the publication of news abont street railroads in all parts of the continent and abroad, together with observations which they may deem it advisable to make. They seek encouragement in this as in other departments of the enterprise of which this journal is the expression. Information concerning street railroads, now existent or contemplated, is hereby earnestly requested both in the interest of this journal and of the roads themselves. It is desired that by means of the postal card or letter, matters about the finances, condition, management, and so forth, of street railroads, be sent to the editors; and expressions of opinion coming within the wide range of the subject indicated are also sought, for publication in the columns devoted to correspondence. Moreover, the multiplication of subscribers would be a certain means of enlarging and improving the department under consideration. Certainly, the larger the number of those who by their subscription, identify themselves financially with the proprietors, the more numerous will be the contribution of reading matter to the street railroad as to other departments. We accordingly invite co-operation by subscription as well as by written communication, and promise the best results possible to us, from both. While cheerfully and thankfully making our respectful acknowledgements to all who have co-operated with us in the past, we may be pardoned the re-mention of the value we should set upon the assistance of all in any way able to aid our intention to make the street-car department of this periodical one of its most valuable features.

OUR correspondent writing from Rochester, N. Y., is very respectfully reminded that Webster's definition of "tramroad" reads as follows: "A road prepared for easy transit of trains or wagons, by forming the wheel-tracks of smooth beams of wood, blocks of stone, or plates of iron." This definition unquestionably covers the use of the word "tramway" or "tramroad" as applied to street railroads. As it may be urged that it also covers the railroad, generally so called, meaning the way for the passage of the locomotive and cars, we may add that while this is true, it is also true that "railroad" used alone has the exclusive application as expressed above; and that the application of the word "tramway" or "tram-road" to all roads, constructed after the same or a similar manner, which are not "railroads" in the restricted sense stated, is highly convenient, including roads traveled by horse cars, mule cars, donkey cars, cable cars, etc. Our liking for the expression "tramway," as a really apt one, is thus easily defended; but we do not say that any other is not equally defensible, nor entertain the vain expectation that our preference will modify usage to any considerable extent. Hair-splitting about words is, moreover, not a profitable way of spending time and occupying space in these columns.

Union Passenger Railway Co. of Philadelphia.

THE earnings of the Union Passenger Railway Company for the year ending December 31, 1882, were from fares and tickets, $1,272,758.72; from manure, $17,937.65; from advertising, $1.,437.50—total, $1,302,133.87; the expenses during the same time were $896,727.67, making the net earnings $405,406.20. From which deduct interest, $47,893.99, and rentals, $121,468.78, leaving $236,043.43. Out of which a dividend was paid in July, 1882, of $105,000, and another in January, 1883, of $120,000, leaving a balance of $11,043.43. The earnings, expenses and net earnings were apportioned as follows:

	Earnings.	*Expenses.*	*Net.*
Fairmount	$182,712.96	$131,783.81	$50,929.11
Poplar and Spring Garden sts	10,957.69	11,414.20	Loss 450.55
Richmond	198,037.35	144,431.85	53,605.50
Cedar street	4,341.40	4,226.78	114.62
Columbia Avenue	239,035.56	142,639.47	96,996.09
Jefferson street	73,250.45	57,029.35	16,221,10
Continental	169,628.45	104,433.69	65,194.76
17th and 19th sts	162,735.87	103,984.54	58,751.33
12th and 16th sts	85,762.00	63,500.93	22,261.07
17th and 18th sts	35,947.27	32,229.38	3,717.89
19th and 20th sts	40,716.02	22,587.79	18,128.23
Chris ian street	50,407.20	33,317.79	17,089.41
Susquehanna Ave	30,116.73	28,713.55	1,403.18
Night Line	17,884.92	16,434.54	1,450.38
Total, as above	$1,302,133.87	$896,727.67	$405,406.20

For the year ending December 31, 1881, the earnings were $1,229,523.85, the expenses $835,493.15, and the net earnings $394,030.70—showing an increase in earnings of $72,610.02, with an increase in expenses of $61,234.52, making the increase in net earnings $11,375.50.

The receipts of the Continental in 1882 were $499,137, against $454,571 in 1881, an increase of $44,566. The receipts of the Union in 1882 were $802,996, against $774,952 in 1881, an increase of $28,044. The President in his report says:

The past year has, taken altogether, been very prosperous. We have had largely increased expenses—in fact material and feed have been higher than at any time since the fares have been reduced from seven cents—but our business has grown equally fast and left us at the end of the year with increased profits, which have justified us in increasing our semi-annual dividend to a point that we are satisfied we can adhere to.

During the year we have laid a Cable railway on Columbia avenue, from the depot Twenty-third and Columbia avenue to East Park, in all nearly two miles, with machinery sufficient to propel the rope for an additional distance of four miles. We have also purchased a property on Sansom street, east of Ninth street, for the purpose of placing machinery in it to propel such line as we may feel justified in building down town.

We intend making a thorough trial of the portion now built, and should it prove satisfactory the Board will then cause to be built an extension from Twenty-third and Columbia avenue, on Columbia avenue to Seventh street, on Seventh, Franklin and Ninth streets to Market, and on Market to Front street. We entertain no doubt whatever of a successful result, in fact we expect to commence running as soon as we have a period of good weather long enough to get our machinery started.

The receipts from all sources during the year 1882 were $1,755,258.34, and the total expenditures were $1,638,788.27, leaving a cash balance at the end of the year of $116,470.07. The receipts comprised: cash at the commencement of the year, $96,989.59; fares and tickets, $1,272,758.72; manure, $18,417.35; capital stock—Union, $326,100; dividends—Continental, $15

000; advertising, $5,662.50; reduction in amount of feed and supplies, $20,330.18. The aggregate expenditures were: conductors and drivers, $231,742.67; wages, $38,285.31; hay, $82,893; straw, $9,404.09; corn, $134,040.17; oats, $3,448.37; rye, $9,448.58; bran, $7,207.54; real estate repairs, $4,868.90; car repairs, $53,003.84; street repairs, $47,750.05; harness, $5,558.16; stable labor and materials, $82,297.39; blacksmiths, $28,389.14; gas, $7,059.35; oil, $2,030.89; miscellaneous, $14,586.21; salaries, $19,818.96; royalty and detective, $5,960.99; printing and stationery, $4,573.56; rents, $137,945; insurance, $3,232.30; taxes, $55,704.50; damages, $6,668.65; horses, $37,401.88; interest, $47,893.99; dividends—Union, $192,500; Continental Passenger Railway Co., $1,500; Empire Passenger Railway Co., $250; Construction—Union, $47,831.94; equipment—Union, $64,226.65; real estate—Union, $33,091.70; Cable road, $146,663.31; stock, $35,072.75; loans, $30,000; profit and loss, $6,435.63.

The number of cars on hand at the commencement of the year was 280, and at its close 349; of which 326 were in good and 23 in bad condition. The number of horses on hand at the commencement of the year was 1,706, and at its close 1,713; the average number on hand during the year being 1,746. Number of sweepers, 23.

The receipts per mile run for a two-horse car with conductor and driver are given at 27.18 cents, and the cost per mile run at 18.72 cents. Receipts per car per day, $20.62; expenses, $14.53. The mileage of cars was 5,372,354. The number of passengers was 21,864,841; free, 440,654; transfers received, 10,920,682.

The receipts for the three years ending December 31, 1882 (including $45,000 for rentals), were $3,749,173.42; and the expenses (including $189,537.06 for interest and $400,139.78 for rentals) were $3,113,427.89—leaving $635,745.53; from which dividends amounting to $575,000 were paid, leaving a balance of $60,745.53. During the same years there was expended for new construction $130,791.26, for equipment $117,299.45, and for real estate $62,371.89—a total of $310,462.60.

BALANCE SHEET, JANUARY 1, 1883.

Cash	$116,470.07
Construction—Union	809,333.00
Construction—Continental	161,009.26
Equipment—Union	457,307.49
Equipment—Continental	105,476.74
Real Estate—Union	520,071.80
Real Estate—Continental	113,869.99
17th and 19th Sts. Pass. R. W. Co	200,000.00
17th and 19th Sts. Stock	600,000.00
Cable Road	146,663.31
Stock	35,072.75
Feed and Supplies	38,379.81
Accounts Receivable	11,302.13
Total	$3,314,956.35

Capital Stock—Union	$751,100.00
Capital Stock—Continental	580,000.00
Funded Debt—Union	500,000.00
Funded Debt—Continental	350 000.00
Funded Debt—17th and 19th	200,000.00
Profit and Loss	933,856.35
Total, as above	$3,314,956.35

President—WILLIAM H. KEMBLE.

Vice-President—PETER A. B. WIDENER.

Secretary and Treasurer—JOHN B. PEDDLE.

Directors—Peter A. B. Widener, James McManes, William S. Stokley, William L. Elkins, Henry Bumm, M. S. Quay.

Superintendent—JACOB C. PETTY.

Cable Cars for Brooklyn.

A COMPANY has been formed under the name of the Brooklyn Cable Railroad Company, to introduce the cable system of towing street cars in Brooklyn. It is proposed to build a line from the ferry at the foot of Montague street to the junction of that street with Court street. The corporators are Edward A. Phelps, Jr., Hiram W. Hunt, Henry E. Dodge, Henry D. Polhemus, Sanford W. Battershall, Edward Annan, C. E. Copeland, Charles Ryder, Charles Wheeler and Samuel H. Swan. The capital is fixed at $250,000, and it has all been taken up. Mr. Phelps has been made president of the company, and maps have been filed. It is intended to begin work as soon as the necessary preliminaries can be settled, and it is expected to have the road in operation by the fall. The system of towing is the same as that successfully operated in San Francisco, Chicago and Philadelphia.

The Philadelphia Cable Motor.

THE new Cable Motor of the Union Passenger Railway Company, on Columbia avenue, Philadelphia, between Thirty-third street and East Park, was formally opened on the 5th inst. The cable, which is of crucible steel, and 9,200 feet in length, was run at the rate of seven miles per hour, by the two "Porter & Allen" engines of 100 horse power each, which have been built to supply the motion. The cable passes through a tunnel or pipe beneath the track, and becomes attached to the car by the action of a "grip," which moves along a narrow, continuous opening midway between the rails. Three trains of three cars each were run several times over the road, a distance of about 1¾ miles, and the workings of the system were thoroughly tested to the satisfaction of the visitors. The cars started gradually and smoothly, and were stopped promptly, but not so suddenly as to be unpleasant to the riders. The same speed was maintained on the heavy grade of three feet to the 100 as on the level portion of the road.

Best Pavement for Horse Railroads.

BY AUG. W. WRIGHT,

SUPT. TRACK AND CONSTRUCTION, NORTH CHICAGO CITY RAILWAY.

Editor American Railroad Journal.

SIR:—Supplemental to my article in your issue of the 24th ult. is the following, explaining our method of paving tracks and detailed cost thereof. In the opinion of the writer no pavement equals that formed of selected cobble stone of suitable size and properly laid, as regards the horse railways. All who have studied the subject and written upon pavements are united in the opinion that an ideal pavement should combine the opposite requirements of a firm foothold for the animal and a smooth surface for the vehicle; most pavements are a compromise between these conflicting requirements. Either the pavement is made smooth to suit the latter, causing the most painful struggles on the part of any poor brute drawing a heavy load to maintain a foothold, or they give the foothold to the great inconvenience of the user of the vehicle by more or less painful jolts, and become a nuisance to all within hearing of the ceaseless din and noise. Our rail, affording a smooth surface of steel for cars and vehicles, paved with small selected cobble stone, giving a firm foothold for the animal, is a near approach to the ideal pavement. We estimate that the railroad life of our horses is prolonged twenty-five per cent by the substitution of such cobble stone for wood. Parties interested in this subject can find a paper in the May, 1881, number of the *American Engineer*, that I read before the Western Society of Engineers, entering at greater length into this subject of pavements. I therein quote from horse railroad managers, from the Atlantic to the Pacific, favoring this pavement, and it has been adopted as the standard pavement for this company, with the addition of rows of granite blocks adjacent to the rails, to take the wear and prevent ruts.

Any pavement is merely a surface to take the wear, and consequently great attention should be given to providing a firm foundation, without which the pavement rapidly disintegrates. Nothing better effects this purpose than the tramping of horses. Therefore, whenever possible, I have our car-horses travel over the new track filled with sand, dampened with water from hydrants in lieu of rain, should the latter not be forthcoming, until firm and solid. The surface is then removed to the proper

depth and a layer of Desplaines gravel, a natural cement, thrown in. This possesses the quality of hardening, when it adheres so firmly to the stones that they can be removed with difficulty. A row of granite blocks is then set along each rail. My specifications for the granite are: stones not less than six nor more than seven inches in depth, nor less than three nor more than four inches in width, and not less than six inches in length. They are required to be dressed square and true, so they can be laid with joints not exceeding one-half inch. The cobble stones are then set in place and are twice rammed to a firm bearing and level surface, and covered with one-half inch of Desplaines gravel to be worked into all interstices by the traffic. The cost of such pavement to this company last season was as follows for one mile of double track. The space paved in the street was sixteen feet in width, including the four lines of rails five inches each. Deducting this space occupied by rails, leaves 5,280 feet x 14 feet 4 inches = 8,408 2-9 square yards.

22 days foreman @$3.25	$71 50
116 days paver @ $3.00	348 00
31 days paver @ $2.50	77 50
131 days rammer @ $2.15	281 65
340 days labor @ $1.50	510 00
195 days team @ $5.00	975 00
624 loads cobble stone @ $6.00	3,734 00
528 loads of gravel @ $4.00	2,112 00
53,576 granite blocks @ 10½cts	5,625 48
240 stone cross-walks @ $1.60	384 00
Total	$14,119 13
Average per square yard	1 67

The granite used averaged 27 stones to the square yard, which weighed 6,425 pounds. It cost on board cars in Chicago $2.70 per square yard. Handling, weighing and hauling into our storage yard, until used, made the stones average 10½ cents each. The cobble stones cost on board vessel at our dock, $20 per cord of 13,000 pounds. The average weight of many wagon loads was 3,545 pounds. The cost of hauling, weighing and piling in our yard averaged $2 per cord. The same stone are worth to-day $30 per cord. The gravel was purchased by the cubic yard and each car load measured. It cost per average wagon load in yard $4, or $2.25 per cubic yard. An analysis of the above items shows that our pavers laid on an average 51½ square yards of pavement per diem, as the foreman, in addition to superintending the work, paved about three-quarters of the time, assumed at 16 days. The granite occupied about 2,000 square yards of the surface, leaving 6,409 square yards of cobble stone, requiring about 174 cords; or one cord laid 37 square yards. About 940 cubic yards of gravel were used, averaging 1½ inches in depth, on top of sand filling. It will be noticed that all the material used by this company is provided in advance and stored in yard before the work is begun. This adds to the cost of material, but saves the greater cost that would be incurred by loss of traffic from delays caused by the non arrival of material as needed, and most of our work consists in relaying existing lines.

The repairs on such a pavement are nominal after one year, and it possesses all the essentials, from a "horse" railroad point of view—cheapness in first cost, durability, a firm foot hold!

I use the word "horse" railroad, Mr. Editor, advisedly, for a "tramway" operated by an endless cable, or any steam, gas, compressed air, electrical or other motor, might find solid granite a better pavement.

TRAMWAY NOTES.

One of the intolerable nuisances of tramway travel in this city is the persistency with which people lug into the cars huge bundles, overflowing baskets, bags of clothes, picture frames, children's velocipedes, and an endless amount of bulky trash. They occupy the floor of the cars and the seats with their packages, which are also shoved into fellow-passengers' faces or deposited with emphasis upon their feet. This annoyance has been lately a growing evil on the elevated as well as the surface roads, especially during commission hours. If the man without a bundle has any rights, there is no justice in permitting him to be made uncomfortable by a neighbor who pays only one fare while he or she takes up the room of two people. A Boston car company has met this evil by insisting that no large parcel can be carried elsewhere than upon the front platform, nor without the payment of an extra fare. The company was driven to this arrangement by experiences which could readily be duplicated here. One man boarded a car with a barrel of flour; another had a tub of butter and a package; a market-boy carried two large baskets of meat; while people with trunks and errand-boys with huge rolls of merchandise have been daily travelers. Why should not a similar rule be enforced on our roads? Let the luggage be confined to the front platform, or else let the companies run one set of cars for passengers and another set for freight.

The Prytania Street Extension of the New Orleans City Railroad was formally opened on the 12th inst. The extension runs from the old station up Prytania to Upperline, to Pitt, to Soniat, to Boudousquie street, to the corner of Dufossat street and St. Charles avenue, where by means of a turn-table the cars are sent back over the route on the other one of the double tracks used. The distance is one and one-half miles either way, the entire work of construction having been completed in fifty and three-quarter days, under the direct supervision of Superintendent Wintz. Steel rails are used all the way, and the work was done in the best manner with the best materials, as the unusually smooth running of the initial car demonstrated. The time made in running up to the terminus on Dufossat street was thirteen minutes, including the time occupied in turning the table, and the run back to the old station occupied twelve minutes. The trip showed that the track is laid in a splendid manner, as the car ran over it with hardly a jolt or jar. The three or four curves on the line of the extension were made without the slightest difficulty. Six cars have been rebuilt for the use of the extension, making twenty-one cars in all in use on the Prytania street line. They are all provided with the Excelsior car starter, invented by D. Negrotto, of that city. The fare is five cents for the whole length of the line, from Canal to Dufossat street. Col. Jos. A. Walker is president of the company, and Fred. Wintz superintendent.

On the new cars of the Sixth avenue surface road, instead of the old bell strap dangling in the middle there is now a series of small straps running through brass clamps between the windows and within easy reach of seated passengers. When one of these straps is pulled a spring in a little box in the corner blows a whistle and the conductor pulls a rope connecting with the driver's bell. In this manner it is intended that no one shall signal the driver but the conductor, and passengers can attract the attention of the conductor without leaving their seats.

The New Orleans City Council have granted to the City Railroad Company the right of way for the extension of its Camp and Magazine street line through Laurel street, to the lower line of the City Park, in the Sixth District. The road, as thus extended, will form one continuous line from Canal street to the City Park. For this privilege the railroad company gives a bonus to the city of $50,000, the said amount divided into five yearly payments, the first of which falls due on January 1, 1890.

The stockholders of the Hall's Springs Street Railway Company have re-elected as directors H. Irvine Keyser, William Keyser, Robert Garrett, John A. Robb, J. Morrison Harris, John S. Gilman and Levi Fischmeyer. It was decided to issue to the City of Baltimore 171 additional shares of stock at $20 par per share for the indebtedness on account of park tax. The city has become the largest stockholder in this company through this plan of taking stock for park tax in default.

New car 28 of the Fourth Avenue Railroad has a framework of ash, finished with satinwood and panels of curly maple. The

spring seats and backs are of woven cane. The metal work is polished brass. Besides the end lights, a large lamp in the top at the centre illuminates the interior in a manner never before seen on the cars of this railroad by the "oldest inhabitant."

THE Market Street Passenger Railway Company, of Philadelphia, is building two new cars which will have only four windows on a side, 21½ by 39½ inches in size, and have perforated cane seats and brass interior fittings.

GROUND has been broken at Somerville, Mass., by the Charles River Railway for the extension of its new line. It is to run from Summer street to Putman avenue, and from there to the new stable on School street.

THE Long Island City Shore Railroad and Steinway Avenue Railroad, two of the principal horse-car routes in Long Island City, were purchased by William Steinway, of Steinway & Sons, on the 17th inst., for $9,000.

THE West Philadelphia Railway Company have made application to the city councils for permission to change the method of propelling their cars on the streets used by them.

THE Charles River Railway Company, Cambridge, Mass., has added seven new and handsome cars to its rolling-stock, which will be put in operation at once.

JOHN MCCARTHY has been elected president of the Citizens' Passenger Railway Co. of Philadelphia, to fill the vacancy caused by the death of George Williams.

IN the New York Assembly on the 17th inst., Mr. Oakley's bill requiring bob-tail cars to have conductors was lost by a vote of 62 to 37.

THE Maysville, Kentucky, tramway will be three miles in length, and cost $10,000 per mile.

MERIDIAN, Miss., is going to build a street tramway from the depot to Rose Hill Cemetery.

CARS commenced running on the Johnstown (Penn.) Street Railway on the 10th inst.

W. H. PALMERSTON has been appointed manager of the St. Thomas Street Railway.

THE Seventh Avenue, Brooklyn, Tramway commenced operation on the 19th inst.

GAINESVILLE, Florida, proposes to have a street tramway very soon.

THREE new combination postal, baggage and express cars were recently turned out from the Ontario Car Works, at London, Canada West. They are of somewhat unique construction, as both ends are closed up and entrance can only be gained from the large side doors. The object of this innovation is to afford protection to the express and postal officials, as it is thought that by such an arrangement it will be impossible for burglars or robbers to effect an entrance. These cars form a portion of thirteen cars of similar construction that are being manufactured there for the Canadian Pacific Railway, and four yet remain to be completed. In addition to the unique arrangement in regard to ends being closed, each compartment is provided with an apparatus that will enable the occupant of that place, in the event of fire or other necessity, to instantly apply the air-brakes and bring the whole train to a standstill.

ON the 10th of May, it is said, lunch cars will be placed on the Atlantic Coast Line, from New York to New Orleans, via Jacksonville. These cars will carry cold hams, roasted turkeys, canned goods, and wines and liquors. It is stated that the lunch set in the cars is much better in every way than the meals set in the average eating-houses. When these cars are put on, traveling will be a luxury. The fear of the ordinary railway eating-house, with its indigestible fries, slop coffee, rampant butter and leather steaks, operates as a serious drawback to travel.

Percentage of Operating Expenses.

THE annual statements of the railroads in the United States are nearly all in, and the public is put in a position to judge from facts and figures the relative value of the different railroad stocks in the country. There are many gauges of measurement in arriving at a conclusion regarding the most profitable stocks, but there is no estimate which is more reliable than that predicated on the percentage of operating expenses to gross earnings. These tell the tale and offer irrefragable proof whether the relative managements have reached the lowest possible expenditure for running their respective roads or not. The field open to discussion is one of wide and expansive area, but in the Auditor's accounts nothing shows so well as the road which exhibits a concise return for the year and displays annual earnings which, in proportion to the receipts, offer greater inducement to the capitalist to invest. The man with money is guided in his investment by the character of the management and the cost of operation in ratio to the business of the line, and in this connection it cannot be classed as an egotistical effort when local interests draw attention to the superior attractions of local roads.

After a careful and conscientious analysis of the balance sheets of the various railroads, the deduction is forced that the company which presents the lowest percentage to the business conducted is the St. Louis and San Francisco Railway, of which Capt. C. W. Rogers is the General Manager. This is one of the best managed roads in the country, and ever since its inception it has ranked as one of the most economically operated lines, which has satisfied its patrons without inclining to deterioration. It is only partially completed, and is open to enormous charges in the construction accounts for extensions and costly improvements, which enter into the general outlay and are debited to expenses which govern the proportion of operating expenses. In its last annual report evidence was furnished that its operating expenses did not exceed 44.56 per cent. It has a mileage of 695 miles under lease and control, which runs through a country mainly barren of trade facilities, and which leaves the line indebted to transient traffic for its earnings. With through business, and a consequently heavy traffic, the operating expenses would be reduced to a minimum, and a basis would be set for other corporations to emulate.

The nearest approximation is the Illinois Central, which manages 1,892 miles at a percentage of 44.91. The Missouri Pacific comes next with 51 per cent, and the Chicago and Northwestern takes its rank with 3,278 miles in 1882, operated at 53.37 per cent against 48.59 in 1880. The Chicago, Milwaukee and St. Paul estimated the cost of management last year of 4,217 miles at 60.60 against 54.70 per cent. in 1880. The Chicago, Rock Island and Pacific, with its 1,381 miles, does better, and only attains an average of 55.45 per cent, while the Louisville and Nashville, having a mileage of 2,028 and no material extensions or improvements, reports a proportion amounting to 61.97 per cent. All the roads cited are trunk lines, having a through traffic, which is an incessant source of revenue, producing business when local offerings are light and not calculated to improve the stockholders' prospects.

The secret of the management is involved in a reduction of casualties and wrecks. The St. Louis and San Francisco operates through a country which is unequaled in its engineering obstacles, offering many precipitous declines and innumerable acclivities to surmount, and on the whole giving a roadway which is liable at all seasons of the year to the perils of storms and floods. Capt. Rogers takes a just pride in his railroad, and recently in the Windsor Hotel, New York, when accosted by Eastern rivals about the low percentage of operating expenses, he replied in his suave and modest style that he was not responsible for the economy in a greater sense than that he adopted the American automatic brake when it was first submitted to the public. "I have had no wrecks or collisions, and several times

when cars were derailed on the edge of a steep bluff the action of the brake was so instantaneous that the velocity of the train was checked before the equipment was knocked into kindling." —*St. Louis Globe-Democrat.*

A Tribute of Respect to the Memory of Peter Cooper.

A MEETING of the members of the American Geographical and Statistical Society was held at Chickering Hall, this city, on the evening of the 16th inst., for the purpose of paying a tribute of respect to the memory of the late PETER COOPER. Chief Justice CHARLES P. DALY, President of the Society, in opening the proceedings, said that Mr. Cooper was one of the earliest and most valued of its members, and spoke of the numerous benefactions which it had received from his hands, and the lively interest always manifested by him in its work and progress. "It is fitting," he said, "that its members should give expression to their feelings of obligation to their departed benefactor by this memorial meeting." After eulogizing the many enobling and endearing qualities of the great philanthropist, he stated that some years after the formation of the Society there was danger of its succumbing for want of means wherewith to prosecute its several undertakings; and it would then have been disbanded but for the timely assistance rendered by Mr. Cooper, who placed rooms in the Cooper Union at its disposal free of cost until the membership was increased from 200 to 1,000 and the Society had attained a sound financial basis. He said that he had been intimately acquainted with Mr. Cooper for forty-three years, and what impressed him most during that long and familiar acquaintance was the consistent uniformity of his character. With every succeeding year of his friendship his veneration for the integrity, worth and simplicity of the man had deepened. Although he died leaving a fortune of $2,000,000, it is said that he gave away for benevolent purposes during his lifetime more than $4,000,000. Mr. Cooper had said he always recognized that the proper use for money was to do good to others, and in these words he had furnished his own best epitaph.

Judge Richard O'Gorman spoke at length of Mr. Cooper's life and works of philanthropy, describing him as a simple, unostentatious and unpretending citizen, who acquired wealth and power by the innate force of his own integrity and worth. He was a man who studied nothing but the science of doing good, and year after year, with larger purpose and larger means, he put that science to benevolent use. The career of such a man, he said, did honor to the people from whom he sprung. Peter Cooper was the model citizen of New York. He was in this republican nation a king among men—a king by the royalty of his munificence. The most fitting memorial that could be raised to him by the wealthy citizens of New York would be to take up his plans and purposes and carry them into larger and more extensive execution by building institutions like the one that he had established for the benefit of the people.

A series of resolutions was then offered and adopted in which the Society acknowledged its indebtedness to Peter Cooper for his munificence, and the great loss it sustained in his death. A resolution was also adopted to have his portrait painted and placed in the hall of the Society.

International Electric Exhibition, Vienna, 1883.

WE have been officially informed by the Austrian-Hungarian railway administration that they have concluded to grant reductions of freight on all objects sent to the Electric Exhibition in Vienna, which, according to the different tariffs on piecegoods will amount to a reduction of from 70 to 80 per cent. This much reduced tariff is relating to the transport of goods to and from Vienna. Besides, the insurance of the full value on the objects destined for the International Electric Exhibition will be allowed, and a simple certificate, issued by the Commission and added to the bill of lading, will suffice to give all these benefits to the exhibitors. With railway companies abroad, negotiations have begun which will, we have no doubt, lead to favorable results.

American Iron and Steel Trade.

THE annual report of the American Iron and Steel Association, in its review of the domestic iron trade for the year 1882, says that the extraordinary activity in the iron and steel industry, which began in 1879, culminated early in 1882, when the wants of consumers became less urgent and prices generally began to decline. Their best customers, the builders of new railroads, did not, it is true, build fewer miles of road in 1882 than in 1881, but it had become certain that much less money could be obtained for new roads in 1883 than in 1882, and the consequent shrinkage in railroad mileage in the new year had therefore to be preceded by a largely decreased demand for railroad materials and by lower prices. "Then again," says the report, "in the prosperous years referred to we had increased our capacity for the production of most forms of iron and steel much faster than the consumptive wants of the country had increased. Finally, in October, November and December came political complications which unfavorably affected all business.

"The success of the Democratic party in the Congressional elections was regarded by many as unfriendly to the continuance of our protective policy, and the report of the Tariff Commission recommending large reductions in the existing tariff served to deepen the public concern in reference to the immediate future of this policy. We regret to say that the action of Congress during the past winter in reducing duties has fully justified this anxiety, and historical accuracy requires us to add that this reduction was recommended by a Tariff Commission which was mainly composed of Republicans, and that it was accomplished by a Republican Congress. The reduction effected in the duties on iron and steel were much larger than in the duties on any other leading manufactured articles.

"Since the beginning of the present year the condition of our iron and steel industries has not improved. It seems to be absolutely certain that prices must, for some time to come, rule extremely low. This condition of affairs in the great industries under consideration may have its advantages in stimulating consumption at a time when the country is blessed with an abundance of good money, and in checking the erection of new rolling-mills, blast furnaces and steel works, which experience has shown are not needed; but it is greatly to be regretted that it brings also low wages with no compensating benefits to those who receive them. It is not true, as a certain class of political economists persistently teach, that when wages are reduced other things are correspondingly reduced in price; but, even if this were so, low wages and low prices always suggest hard times. We do not therefore regard it as a propitious sign that prices of iron and steel are now so low as they are. Good prices and good wages were far better. But the fact cannot be altered that low prices for iron and steel now prevail, and we can only hope that wages will be adjusted upon a scale that will be mutually satisfactory to manufacturers and their workmen.

"There was a large decrease in the production of iron rails in 1882 over that of 1881 and a small decrease in the production of open hearth steel rails and crucible steel ingots, but in all the other articles there was an increase in 1882 over 1881. With the single exception of pig iron, however, this increase was in no instance large, and even in pig iron it was only 11 per cent. The iron and steel imports in 1882 made a total of 1,335,371 tons, The value of our iron and steel exports was in that year $19,029,-759. Our pig iron production in 1882 was obtained in twenty-six States and Utah Territory, and of the total of 5,178,122 tons, Pennsylvania produced 2.449,256 tons. The tonnage of iron vessels built in 1882 (40,097 tons) was much the largest in our history."

Promise of Great Attendance at the Coming Chicago Railway Exposition.

It has become apparent that the National Exposition of Railway Appliances, which opens May 24, in Chicago, will be very largely attended by all classes of people. Not railway men only, but mechanics, farmers, merchants and professional men all over the United States are preparing to embrace this great opportunity of observing how railways and the industrial and commercial acivities of our modern life are dependent upon each other. To see what a line of railway involves, what varied industries, what wonderful inventions, what ingenious contrivances, what shrewd adaptations of the oldest principles of merchanics and quick recognition of the newest discoveries, what manifold uses of materials gathered in all parts of the world—the chance of doing this will be eagerly embraced by tens of thousands who have no personal or direct connection with railway enterprises.

The educating influence of this Exposition cannot fail to be very great. And it will be strange if it does not accomplish much toward dissipating existing predjudices and causing a more accurate understanding of those problems involving capital and labor which are now attracting so much attention. The fact that railways are tributary to all departments of labor, and that upon the industries which they have created or vastly increased depend the food upon hundreds of thousands of table and the fires of innumerable hearths, will be strongly impressed upon all who look upon the magnificent display of exhibits with intelligent observation.

National Railway Exposition Items.

Several papers, both in the East and West, have erroneously published March 24 as the opening day of the National Exposition of Railway Appliances. The right date is *May* 24, and newspapers throughout the country are requested to aid in correcting this error by calling attention to it. Already a number of persons have taken long journeys to Chicago, expecting to be present at the opening, and in several places excursions have been prematurely organized as a consequence. Everything will be in readiness on May 24 for the opening of this, the most unique, interesting and (except the Centennial) the largest exposition ever held on this continent. But to have everything in place on that day will tax the energies of the executive committee to the utmost. Some weeks since it was decided to make such additions to the Inter-State Exposition building as would increase its floor capacity by about 200,000 feet. And now the plans have been changed still further to increase this amount by 100,000 feet, making an addition of 300,000 in all. This immense extension is found to be absolutely necessary to accommodate the exhibitors who have already applied for space. The enterprise has become colossal, and it will be by far the most significant, attractive, and largely attended attraction of the coming summer.

The Association of R. R. Telegraph Superintendents has changed the date of its next annual meeting in Chicago from the first Wednesday in May to Wednesday, June 13th, so that its members may be able to visit the National Exposition of Railway Appliances, which will be in progress at that time.

One of the older railways of this country will send to the Railway Exposition a section of "T" rail which has been in continuous use from 1838 to the present year. It is intended to accompany it with statistics showing the total tonnage which has passed over it during its forty-five years of service, and also a history of its experiences during that period. The same railway will claim to enter the "oldest railroad man in the United States"—that is, the man who has seen the longest term of continuous railway service. His railway life began several years previous to that of the rail mentioned above. What stories he can tell about railroading in the early days!

The Tanite Company, of Stroudsburg, Penn., will have at the coming exhibition of railway appliances in Chicago a machine for grinding car boxes which does away with their being turned on a lathe. This machine is just completed, new in its character and of great use, as its capacity is 600 car boxes per day. They are ground perfectly true, as it is so constructed that by no possibility can a box be ground otherwise. This company also manufactures a machine for the grinding of locomotive slide bearings, of which thirty are now in use.

Lancaster Manufacturing Co.

The Lancaster Manufacturing Company has been organized under the laws of the State of New York with a capital stock of $250,000.

The facilities for manufacturing the Lancaster tools will now be very considerably increased, and every effort made to execute orders more promptly than heretofore.

The office of the company is at 95 and 97 Liberty street, New York. The officers are: James H. Lancaster president, John Pickering treasurer, John Q. Maynard secretary.

The company has acquired the right to manufacture and sell in the United States and Canada all the patented inventions of James H. Lancaster, consisting of stock, dies and adjustable pipe guides, twin pipe cutters with burr scrapers, combined pipe and nut-wrench, combined pipe cutter, wrench and burr scraper, combined punch, shear, wire cutter and anvil, pipe inside burr reamers.

Other improved tools will be added to this list from time to time, and the utmost care will be observed both in the construction of the tools and in the execution of the orders intrusted to them.

MANUFACTURING NOTES.

Riehlé Bros., proprietors of the Philadelphia Scale and Testing Machine Works, report orders coming in for their products beyond expectation. They have lately received orders for Testing Machines from the Helmbacher Forge and Iron Co., St. Louis, for a 75 ton Horizontal Testing Machine; Carnegie Bros., (Lim.) 200,000 pound Vertical Machine; Pawtucket Manufacturing Co., Pawtucket, R. I., 50,000 pound machine; and same for the Solid Steel Co., Alliance, Ohio; a 4,000 pound Cement Tester to go to Russia; and 1,000 pound Cement Tester for City Engineer's office, Toronto, Canada. Orders for scales, especially of the self-adjusting Railroad Track Scale with rocking bearings, and their celebrated Furnace Charging Scales, are numerous.

Letters from fifty-five of the leading machinery establishments throughout the country indicate the present condition of business, the progress made in 1882, and the prospects for 1883. The letters are all cheerful. There is scarcely an exception to the claim that manufacturers of machinery are everywhere in a flourishing business, and the outlook for the present year is considered promising. Most of the firms report orders for months in advance, compelling an increased equipment. The machine tool builders are apprehensive that they will be unable to fill within a reasonable time the many requisitions already on file. "Engine builders are pressed to deliver their motors, and steam pump manufacturers are enlarging their facilities to meet the increased demand."

The Bethlehem Iron Company has acquired mines, reported to be very great deposits of pure and uniform specular ore, in the Island of Cuba, at a distance of four miles from the coast, and, by a line to be run fifteen miles from Santiago, a good port. The ore is so readily accessible that it can be mined by open-cut work and can be loaded directly into the cars. Until the railroad has been built to the port in question the ore will

be transferred by lighters at the nearest point on the coast to the vessels. It is estimated that the ore can be put on board cars at the mines at a maximum cost of 50 cents per ton.

THE first iron sailing vessel built in this country was launched from the yard of the Pusey & Jones Company, Wilmington, Del., in 1854. It was the schooner christened the Mahlon Betts. In 1869 a sloop, Iron Age, was launched at the yard of the Harlan & Hollingsworth Company, of the same place. The Lillie E. Starbuck, built by John Roach and launched at Chester, Penn., on the 14th inst., is claimed by the builder to be the first full-rigged sailing ship built in this country wholly of iron.

THE American Brake Company, of St. Louis, Mo., gave an exhibition at New Haven, Conn., on the 9th inst., of its automatic engine and freight car brakes on the New Haven and Northampton Railroad in the presence of many railroad officials. The train consisted of a large engine, twenty freight cars and a passenger coach, making a total weight of 228 tons. Five experiments were made and the average stops, while running at the rate of from twenty-five to thirty miles an hour on a level grade, were made in forty seconds within a distance of 225 yards.

THE Central Pacific Railroad Company are having the Westinghouse automatic air brakes attached to the freight cars. These brakes work just opposite to the ones now attached to all passenger trains. While the engine is in motion the blocks are kept off the wheels, but when the engine is detached or the train becomes uncoupled, the brakes are immediately applied.

The Elevated Electric Railway.

BY W. L. SILVEY.

WHENEVER a new motor has been devised, about the first attempt to put it to practical use is as a locomotive. Almost before steam power had been liberated from the tea-kettle, and before it had assumed the high pressure non-condensing form, men began to speculate on its possible merits as a locomotor. So it is with every other class of motor. Spring clocks paved the way for spring motors. The expansion and contraction of metals —all solids, fluids, etc.—through heat suggested motors, and with every other class of motor locomotion suggests itself. Even the delusive perpetual motion has been assiduously worked in that direction even before it would drive itself alone. A motor invariably suggests locomotion, until it seems the subject has been thoroughly overworked. Among the class of motors most prominent and with the brightest future, none are more prominent than electro-motors. The discovery of the electro-magnet gave a powerful stimulus to scientific inquiry, and Page, Henry, Stinheil, Jacobi and others immediately turned their efforts into the new field for the purpose of producing a successful electric engine for locomotion, the electric current being supplied from a battery. Crude as were their motors, yet the success then attained reflects a bright spot on the entire field of electric efforts. Although their machines were not financially a success, yet they cast a long shadow into the history of present inventions; and although they were not able to draw a train, yet they were able to run at a considerable speed on a circular track; and considering the imperfect battery then in use, they were often machines of decided merit. We boast of the learned inventors of the present day, yet none of them has grasped the subject of electro-motors with such a firm hold or maintained such a profound supremacy for originality as did the pioneers in this grand field of scientific development. Among the numerous plans devised for turning the force of electricity to account for railway purposes, the following would evidently be most successful:

First, the employment of one rail to convey the current to the motor, the other rail to return the current to complete its full circuit.

Second, the employment of an overhanging conductor for the conveyance of the current to the machine, the rails to be used only for the return of the current—the plan for which I more fully discussed in a previous article; and

Third, cables have been tried from which the machine is suspended in such a way that the wheels of the motor may traverse their length, one of the currents flowing through each cable.

Of the three plans the second is evidently much the best, because in case of rain or snow a cross electric current would be formed between the rails which would partially if not wholly stop the flow of the current through the proper channels. As to the third plan, it is still more impractical, because the entire load being suspended from the cable it would necessitate the erection of two lines of extremely substantial columns for the support of the cables. After this has been done, then comes a more serious drawback, which results from the expansion and contraction of the cable through changes of temperature, causing it to sag between the columns so that the line would be a constant ascent and descent between each column; and in case a cable should break, owing to the distance to the ground the loss of life would be fearful.

The second plan is not open to this defect because the wheels run on a solid road-bed; and as the current flows to the motor over an overhanging conductor, the rails only conveying the current in one direction, it is next to impossible to cause a cross or short circuit, hence the loss of power is reduced to a minimum. Of all the applications to which electric motors may be adapted, none is more practicable than its employment for elevated passenger railway service, for it is here that the most power may be derived from a given current, owing to the extra insulation possible with but little expense; and the electro-motor being so much lighter than a steam motor of the same power, it is possible to employ a much less expensive roadway, which in this class of railways is an item of much importance. More than this, the electric railway presents a much more graceful appearance than the steam railway and at the same time is not nearly so cumbersome. Having made electric railways a study in connection with a peculiar electro-motor which I have recently invented and patented, the following plans have suggested themselves to my mind for its application to elevated railways. Instead of making the supporting columns of the road-bed perpendicular, as now employed on the elevated roads in New York, I would employ A shaped supports, the road-bed to be laid on the cross bar of the A shaped framework. Let the foot of the A shaped columns rest on each side of the street and the angle thus attained will give the roadway sufficient elevation to carry it entirely out of the way. The great utility of this plan is apparent, for it not only affords a safe and convenient railway, but at the same time, it being elevated directly above the center of the street, is entirely out of the way and is comparatively noiseless and cheap. Another great advantage for this plan is, the columns being A and the roadway on the cross beam it will be seen at a glance that the columns project entirely above the car, where they are firmly secured together, and in so doing one part firmly braces the other. This renders an electric bicycle railway possible, for at the top of the A shaped columns one rail is secured, the other rail being placed on the center of the cross beam; the wheels being flanged on both sides, derailment becomes almost impossible. Under this plan the top rail carries the current, which is taken off by the flanged traveler on top of the car (which serves to keep the car upright), from which it is carried to the motor and thence to the bottom rail, along which it flows to complete its circuit. If from any cause it is deemed best to have both rails on the cross beams, then a conducting wire may occupy the top part of the A shaped framework, the current to be taken off by suitable brushes on top of the car, to be carried to the motor, and after performing its work escape through the rails. These plans will evidently solve the problem of extra insulation in electric railways, which at this time so much perplexes electrical engineers. Sufficient has been said to

open a new field, and should this lead to beneficial results I shall feel fully repaid for my efforts.

CASTLETON, Ind., April 10, 1883.

LITERARY REVIEW.

THE contents of "The Cornell University Register, 1882-83," a copy of which is sent to all graduates who furnish their addresses for the purpose, and to other persons on application to the Treasurer of the University, Ithaca, N. Y., are such as commend it to the attention of a large circle of intelligent and patriotic people. This valuable pamphlet of about 125 pages, contains among other matters an account of the organization and government of Cornell University, the terms of admission to that institution, full information as to its departments and special courses of study, its library, museum of natural history, its degrees, honors, scholarships, etc. We find under the head of "Departments and Special Courses of Study," that a laudable attention is given in the University to the pursuit of a knowledge of the mechanic arts, architecture, civil engineering, mining engineering, free hand drawing, modern languages and other subjects, which make the best of our institutions of learning not only places for the cultivation of the mind, but of real preparation for practical toil in this working-day world. Thanks to the unprecedented development of the industrial arts during this century, in a degree which the scholars of a few generations ago never dreamed of, the university has become a place from which a large proportion of the students contemplate a future of activity in the many departments of business life. Hair-splitting about words and particles, dreamy speculation and scholastic musing, have largely given place in our seats of learning to considerations of practical importance, while the old-fashioned man of books and the embryo priest still find their proper pabulum within their sacred shelter. Cornell, as everybody knows, is one of the universities most strongly imbued with the modern spirit of industrial progress. Its faculty includes the honored name of Estevan Antonio Fuertes, C. E., as professor of civil engineering. In this department instruction is given by means of lectures and recitations, with drafting and field and laboratory work. Since 1874 its faculty and students have been engaged in the surveys of the hydrographic basin of Central New York, as a contribution to the geodetic surveys of the United States Government. Its equipment is singularly complete. The student has an arduous four-years' course before receiving his degree as Bachelor of Civil Engineering. Success in another year's course leads to the degree of Civil Engineer. Want of space forbids the insertion of details regarding the department of Mechanic Arts, which is provided with the machinery and other aids desirable to a practical as well as theoretic acquaintance with the same. Cornell is one of the national colleges founded upon the land grant of 1862. Eminent men have subsequently enlarged the value of its endowment. Nineteen-twentieths of the expenses incurred in its care of more than four hundred students are paid out of the interest of permanent funds which have come from the sale of lands and from private benefactors. Tuition is entirely free to a large proportion of its students. Eighteen separate courses of study are open to the choice of the student, including, as we have seen, some of a directly practical character. The original act of incorporation provides for the admission of one student annually from each Assembly District of New York State, without payment of tuition. These "State students" are to be selected by yearly competitive examinations from the various academies and public schools of the State. We hope that enough has been said in this necessarily incomplete review of "The Cornell University Register, 1882-83," to induce at least two classes of readers to acquaint themselves with the interesting and valuable information contained in its tasteful pages; namely: (1) Those who possess the means to assist its usefulness; and (2) Those who wish to find a university for their sons providing the widest range of choice in study, with the means and the proof in the history of its achievements, that instruction given therein is thorough and adapted to the requirements of the present and prospective condition of American civilization.

AMONG the useful works lately received at this office is included the last illustrated catalogue and price-list of presses, dies, canmakers' machinery and other sheet metal tools, manufactured by the Ferracute Machine Co., of Bridgeton, N. J. This work, a large pamphlet of sixty-four pages inclosed in an elegant cover, gives descriptions of the latest developments of ingenuity in the direction indicated above, together with numerous illustrations as excellently produced as the reading matter. The last Ferracute catalogue is quite an acquisition.

OUR stock of business information has been augmented by the receipt of the descriptive catalogue of Geiser's Patent Self-Regulating Grain Separator, Cleaner and Bagger, the Landis Peerless Traction or Road Locomotive, portable and stationary engines, boilers, saw mills, etc. This is a very thorough piece of work as regards both its reading matter and illustrations, and we hope the Geizer Manufacturing Company, Waynesboro', Penn., who publish it, will have their full share of profit from its extensive distribution.

AN enterprise of a hopeful kind has its headquarters at No. 23 Park Row, this city. We refer to the publication of *The Biographer*, a monthly magazine of which the first number (that for May, 1883,) lies before us. It consists of sixty-four octavo pages in a handsome blue wrapper, and contains sketches of thirty-five eminent persons, accompanied with thirty-two portraits. Information has been brought down to date, and the portraits have been prepared on wood from recent photographs. After a careful examination of the sketches, which are necessarily short, we are able to state that we find them well written, timely, pleasing and discriminating. The first number of *The Biographer* is good and promising.

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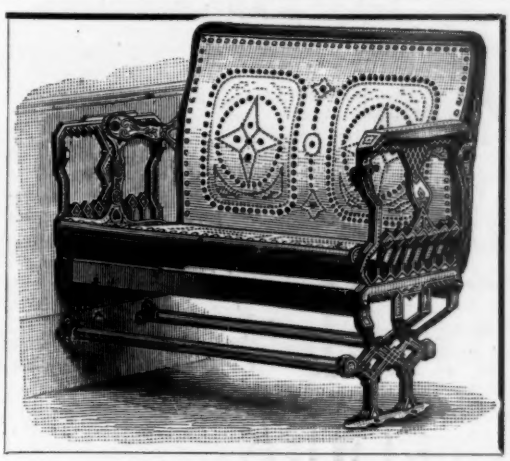

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W. RYDER'S
PATENT
Practical Shaking Grate Bar,

OFFICE: 134 Water Street,
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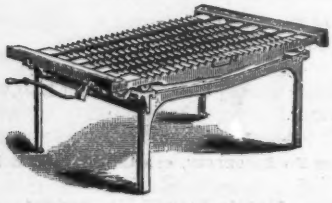

The W. Ryder Double-Acting Grate Bars are so constructed as to rest upon a frame with friction rollers, and by means of a lever attached to the front rocking bar, a reverse or reciprocal motion is produced in each bar, which effectually breaks up the clinkers, and removes all the ashes from the bottom of the furnace.

By this means we get the largest percentage of circulation of air, which keeps the bars cool and prevents them from burning or warping. There is also fully ten per cent of fuel saved, as it does away with the necessity of opening the furnace door and shaking the fire, and thus preventing large volumes of cold air rushing in and producing sudden expansions and contractions, frequently blistering the bottom of the boiler.

This bar has two very superior qualities which no shaking grate ever possessed. The first is a large friction roller at each end of the bar, thus enabling it to be moved back and forth with the greatest ease, though the bar be ever so large and heavy. The second is the header at the end of every bar, thus absolutely protecting the bar from all obstructions of coal and clinkers, that otherwise might get at the end of the bar and stop it's working. This header also affords plenty of expansion and contraction room for the bars. The first set of these bars ever made has been in constant use for some four and one-half years, without any expense except first cost, and the party using them prefers them to any other bar in use.

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PORTABLE Power Drill Presses,
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Cost of packing Boxes with Hulls and Oil for nine months, $1.60; cost of packing Boxes with Cotton waste and Oil for nine months, $4.08.

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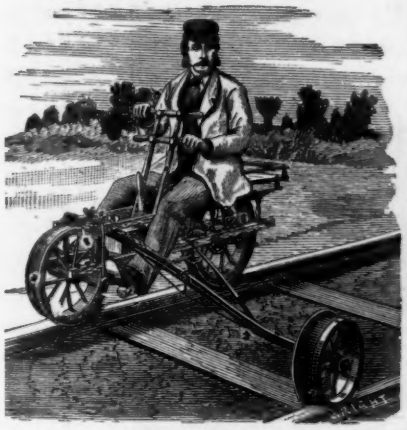

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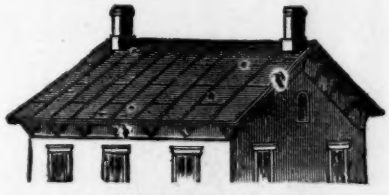

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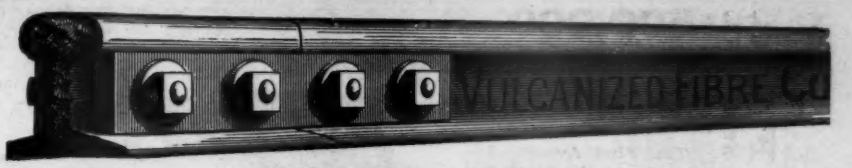

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Of the Finest Finish, as well as every description of CAR WORK, furnished at short notice and reasonable Prices by the

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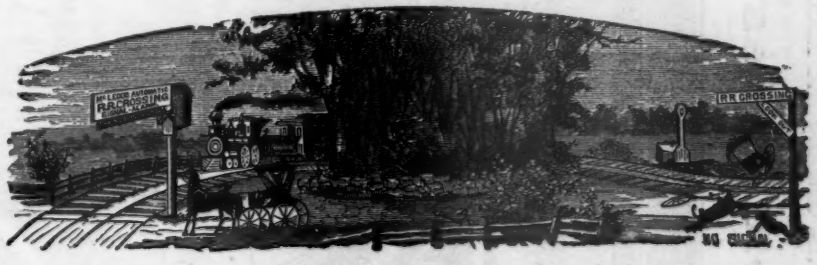

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Automatic Air Railroad Signal

Will prevent Railroad Accidents and Save Life.

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This signal has been fully tested on the New York and New England Railroad at Dudley and Bird Streets, by practical operation, and has proved a complete success, to the entire satisfaction of the many prominent Railroad men and experts who have watched and examined it. It provides an Automatic Block, Crossing, Station, Switch, Bridge, Yard and Curve Signal, Gate and Revolving Lanterns. Being operated by the weight of trains passing over an incline bar, forcing common air through a tube by means of a bellows, which is positive in its action, and highly commended by all railroad officials who examined it.

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MANUFACTURERS OF ALL KINDS OF

Saws, Saw-Sets, Patent Cross-Cut Handles, Tools and Files,

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Not one in a thousand failed to give satisfaction.

The First Award of Australia has been added to the Centennial Awards.

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SAWS, FILES, AND TOOLS,
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Beats all machines. My new goods are guaranteed unrivalled in speed, durability, and ease of sharpening. A six-foot Cross-Cut Saw, with combined file and set and two Patent Handles, will be sent to any address upon receipt of Four Dollars. The universal Pat. sheathed, Pruning and Hand Saw, inclosed in brass-edged sheath, mailed on receipt of One Dollar. A Buck Saw blade will be inclosed with the Cross-Cut for fifty cents additional. By using my patent file a Cross-Cut may be sharpened at a cost of five cents, and a Buck Saw for five cents. Send for illustrated price list.

I make a liberal discount to honest dealers, and will protect them.

I have obtained decree, with costs and damages, against all parties who imitate my **M** teeth which cut with the outside of the **M** only. The two points of each tooth are set upon one side and the next two points on the other side, equivalent to front cut of ordinary hand-saw tooth, both ways, one point alternate decreases cutting one-half, as do all imitations (which are still held liable by the United States Court), and new Company will now collect of dealers and users, as well as manufacturers, for infringements. An Illustrated Catalogue furnished free on application.

For One Dollar, a Pruning Saw, complete, with brass edge sheath, or a Buck Saw blade, will be mailed. Agents wanted, to whom special terms will be made, and who can do well. This Company also manufactures the

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Two through trains daily between New York City and all points on the Housatonic Railroad, from the Grand Central Depot via the New York, New Haven, and Hartford Railroad at 8:00 A. M. and 3:39 P. M.

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Leave Boston for **Grand Central Depot, New York,** at 9 A. M.; returning, leave New York at 11 A. M. and 11:34 P. M., week days. Pullman Palace Cars run through.

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Steamboat train leaves Boston 6:30 P. M., arrives at New London at 10:00 P. M., connecting with the new steamer **City of Worcester,** Mondays, Wednesdays and Fridays, and **City of New York** Tuesdays, Thursdays and Saturdays. Returning, steamer leaves Pier 40, North River, New York, at 4:30 P. M., connecting at New London with train leaving at 4:05 A. M., arriving in Boston at 7:55 A. M. Good night's rest on the boat.

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The Bolts will not elongate or become loose.

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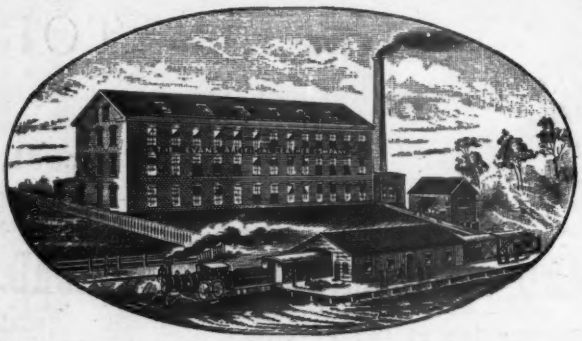

IF NOT, HERE ARE SOME GOOD REASONS WHY YOU SHOULD USE IT.

It is a perfect substitute for Leather in nature and appearance.
It is the only substitute that has proved practical and satisfactory.
It is unaffected by HEAT or COLD, and is impervious to OIL or WATER.
It is made in light and heavy weights, so that it can be substituted for cheap as well as costly leather.

IT COSTS LESS,

Varying from one-third to two-thirds, according to the kind of leather for which it is substituted.

WHERE EVERY ITEM COUNTS,

It is manifestly to the advantage of the Carriage Builder and Upholsterer to use a material that cheapens the cost of production while taking nothing from the looks and style of the job.

SAMPLES SENT, and information freely given by addressing the

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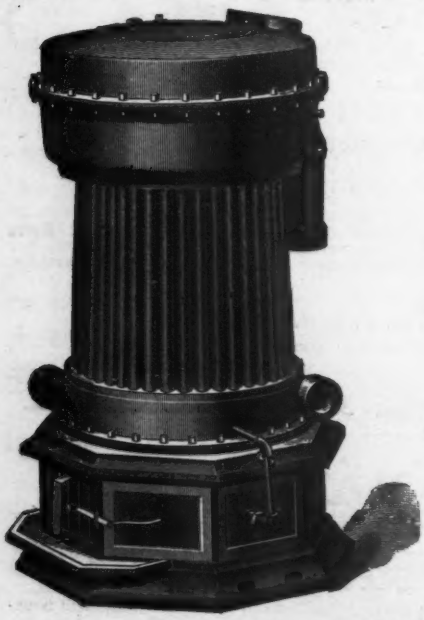


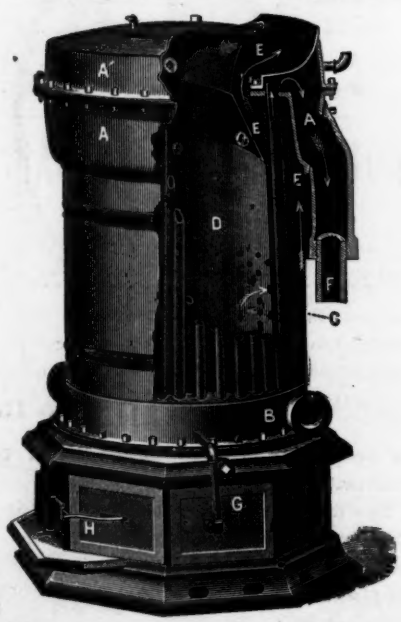
"36 per cent of coal saved and the car kept noticeably warmer!" by using THE SALMON CAR HEATER.

It Insures Safety from Fire in case of Accident,

Economy in Fuel and RAPID CIRCULATION. It heats quickly, is SELF-REGULATING, and can be used for either STEAM OR HOT WATER.

The Water Tubes do not come in contact with the Coals, but occupy the Smoke Flue in such a manner as to absorb the greatest amount of heat from Coal in a **low State of combustion** without danger of chilling the fire.

At the last "Mechanics' Fair" it received the Silver Medal, being the highest award to heaters of any kind.



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MANUFACTURERS OF

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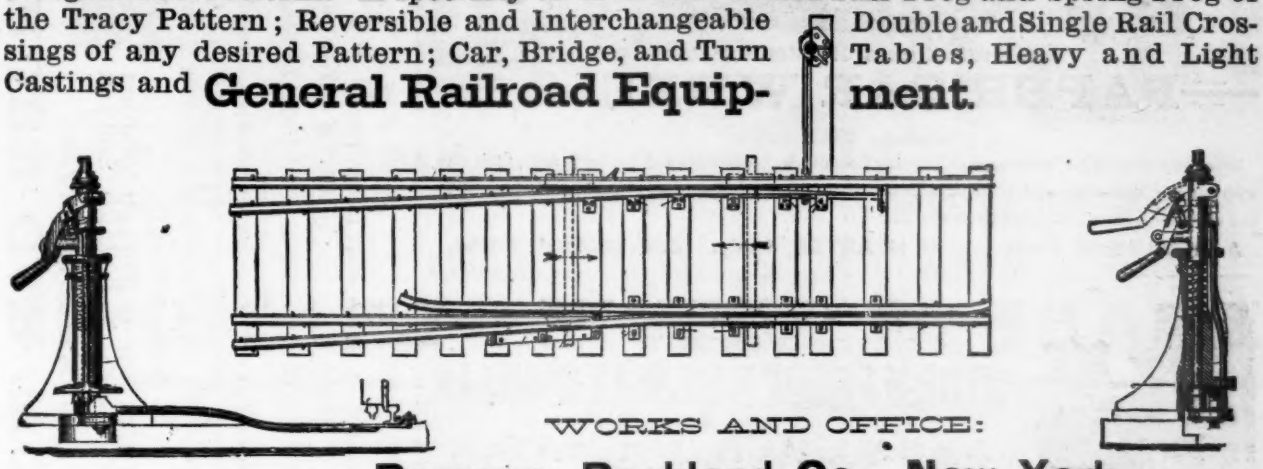

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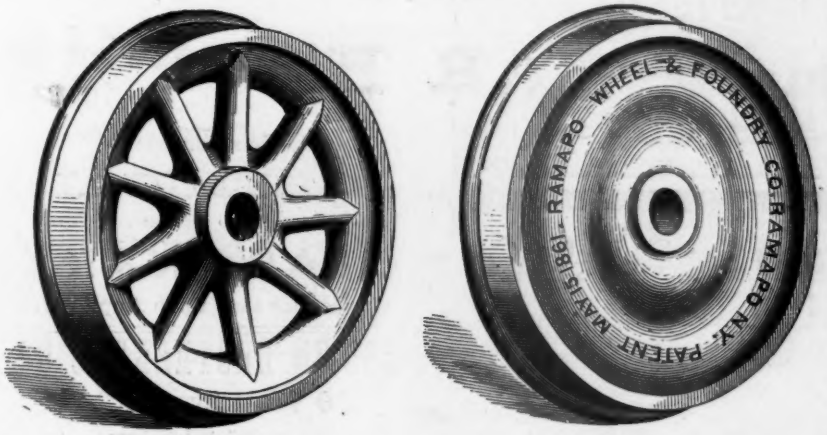

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Axles Furnished and Wheels Fitted.

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IMPROVED CAR BRAKE SHOE.

This improvement consists of a shoe having embedded in its body of cast iron, pieces of wrought iron, steel, malleable iron, or other suitable metal, which increase surprisingly its resistance to wear. All communications should be addressed to

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RAMAPO WHEEL AND FOUNDRY CO., Ramapo, N. Y.

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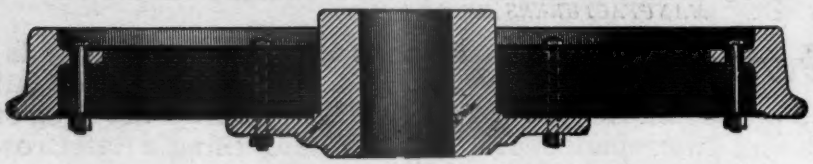

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PAPER CAR WHEELS,

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Especially adapted for Sleeping and Drawing Room Cars, Locomotive and Tender Trucks, Steel Tire, with annular web—strongest, most durable and economical wheel in use. Works at Hudson, N. Y.; and at Pullman (near Chicago) and Morris, Ill.

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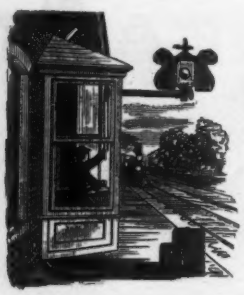

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STORM PROOF RAILWAY SIGNALS

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Manufactured by

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PARDEE, SNYDER & Co., LIMITED,

Proprietors.

Manufacturers of Mail, Baggage, Box, Gondola, Flat, Gravel, Ore, Coal, Mine, and Hand Cars; Kelley's Patent Turn-Tables, and Centers for Wooden Turn-Tables; Car Castings, Railroad Forgings, Rolling-Mill Castings, Bridge Bolts, Castings.

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GREAT BRITAIN, IRELAND, FRANCE, GERMANY, BELGIUM, AND HOLLAND.

Issue Commercial and Travelers' Credit in Sterling,

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